US009606788B2

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Nachimuthu et al.

(10) **Patent No.: US 9,606,788 B2**
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(54) **DYNAMIC UPDATE INSTALLER FOR CUSTOMIZED SOFTWARE**

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(73) Assignee: **Microsoft Technology Licensing, LLC**, Redmond, WA (US)

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(21) Appl. No.: **14/456,679**

(22) Filed: **Aug. 11, 2014**

(65) **Prior Publication Data**

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Related U.S. Application Data

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(51) **Int. Cl.**
G06F 9/44 (2006.01)
G06F 9/445 (2006.01)

(52) **U.S. Cl.**
CPC ***G06F 8/65*** (2013.01)

(58) **Field of Classification Search**
CPC G06F 8/65
USPC 717/168–178
See application file for complete search history.

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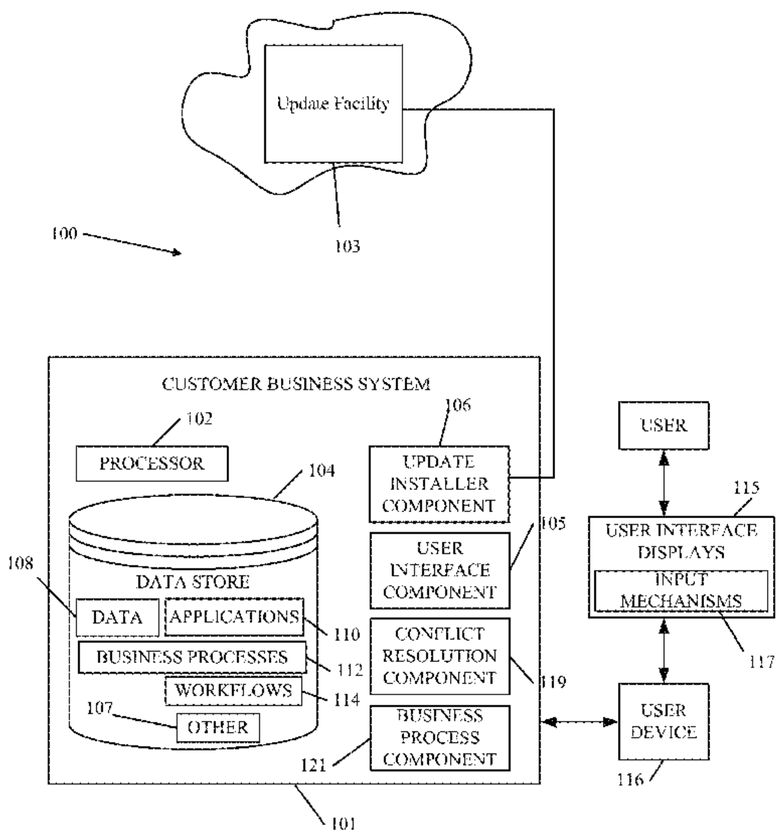
Primary Examiner — Qing Chen
(74) *Attorney, Agent, or Firm* — Christopher J. Volkmann; Kelly, Holt & Christenson, PLLC

(57) **ABSTRACT**

A computer-implemented method of updating a system of customized software is provided. The method includes receiving an update request and collecting contextual information relative to the system of customized software. A query is generated for updates applicable to the system of customized software based on the contextual information. A query response is received indicative of at least one applicable update. A selection relative to the at least one applicable update is received. At least one update is selectively applied based on the selection.

16 Claims, 34 Drawing Sheets



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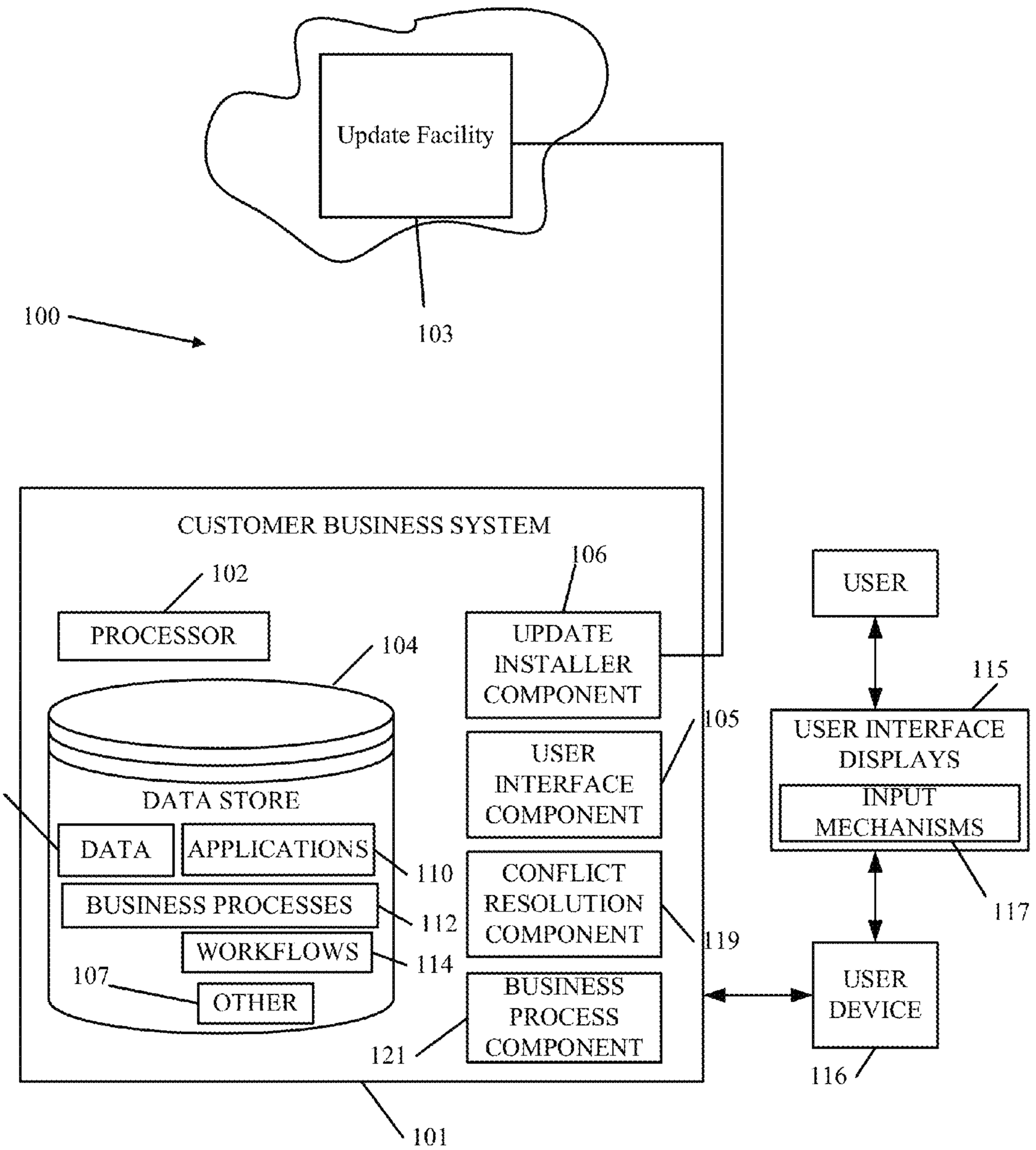

Update Facility
100
103
CUSTOMER BUSINESS SYSTEM
102
PROCESSOR
104
DATA STORE
108
DATA
APPLICATIONS
110
BUSINESS PROCESSES
112
WORKFLOWS
114
107
OTHER
106
UPDATE INSTALLER COMPONENT
105
USER INTERFACE COMPONENT
CONFLICT RESOLUTION COMPONENT
119
BUSINESS PROCESS COMPONENT
121
101
USER
115
USER INTERFACE DISPLAYS
INPUT MECHANISMS
117
USER DEVICE
116

FIG. 1

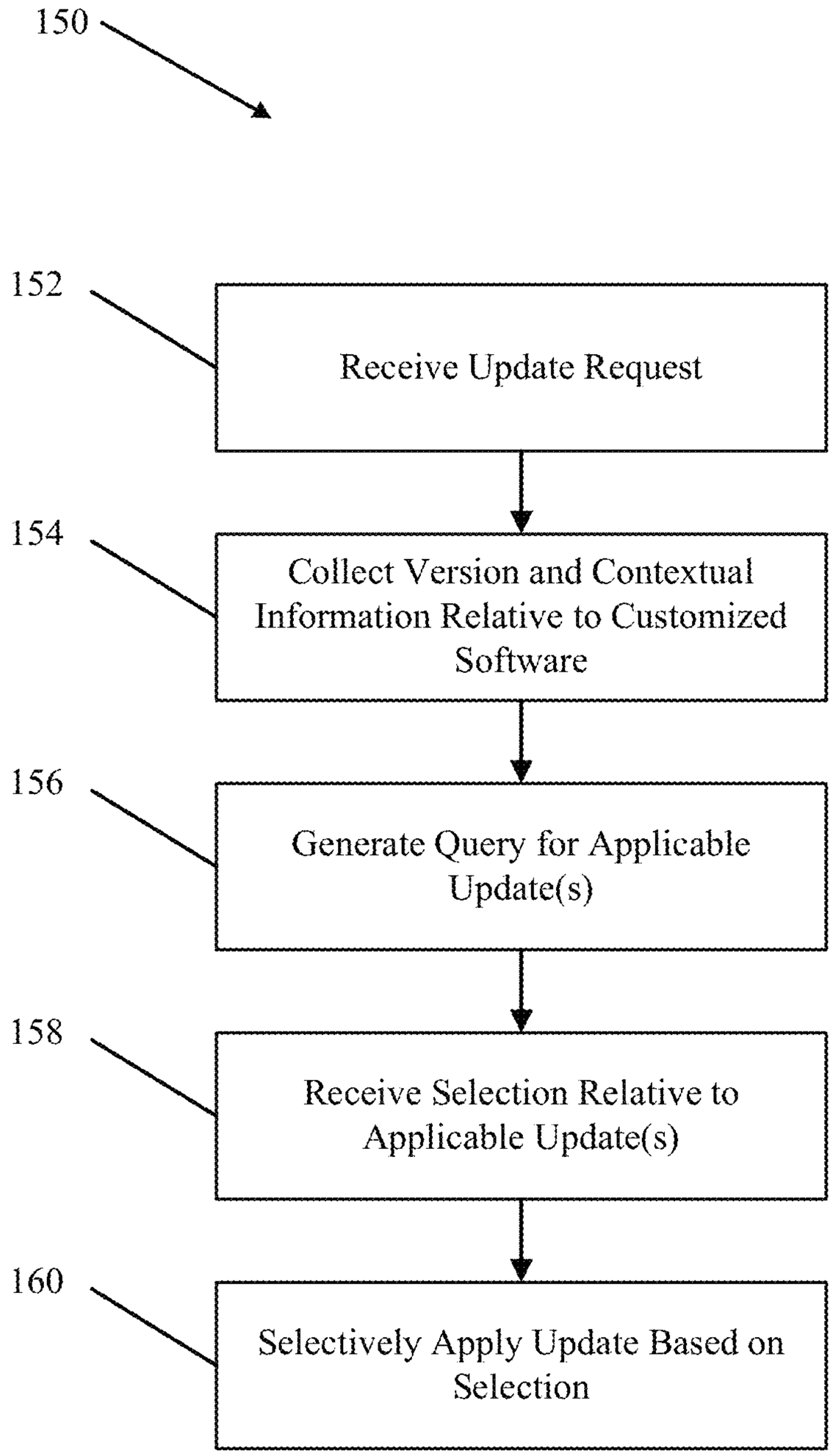

150
152
Receive Update Request
154
Collect Version and Contextual Information Relative to Customized Software
156
Generate Query for Applicable Update(s)
158
Receive Selection Relative to Applicable Update(s)
160
Selectively Apply Update Based on Selection

FIG. 2

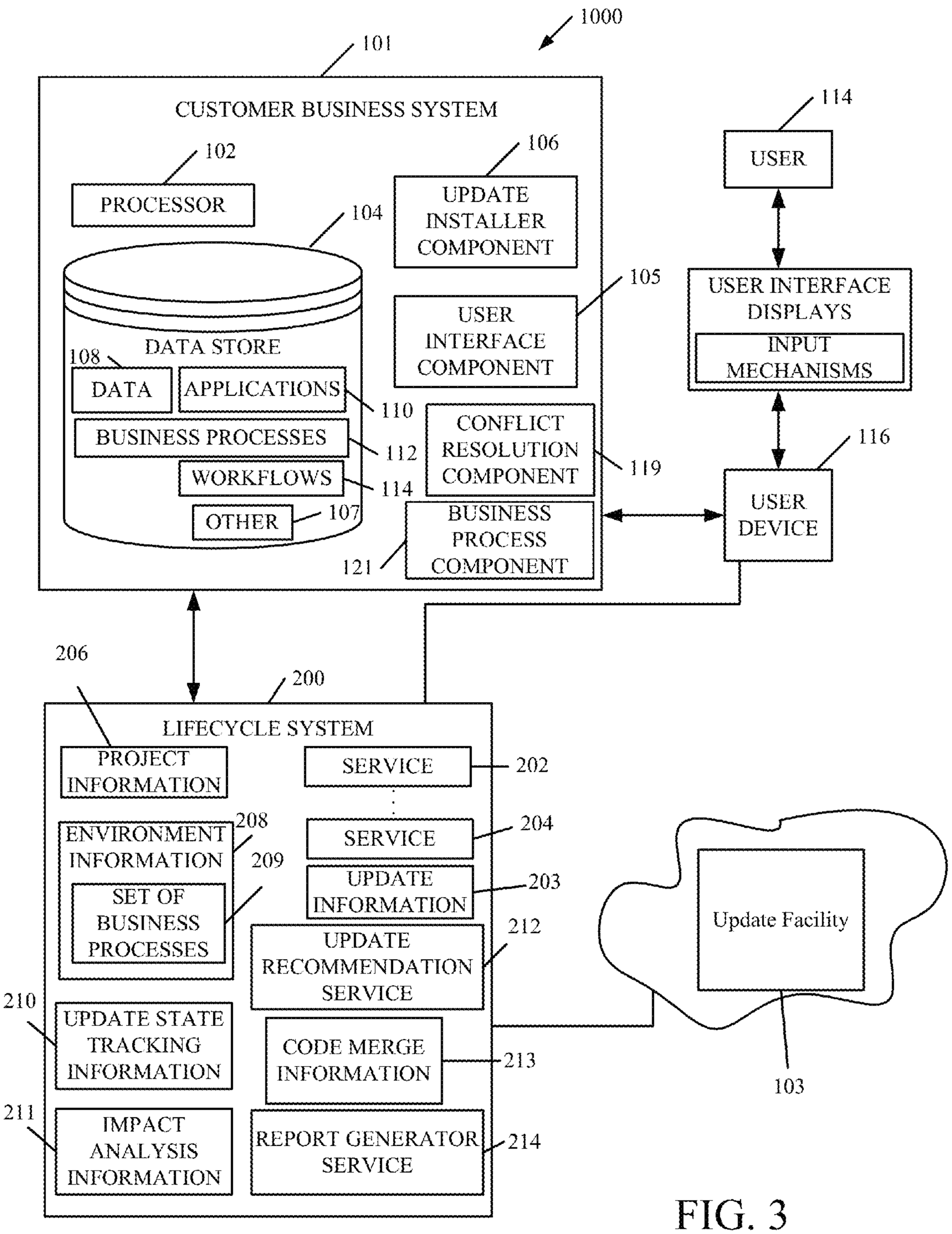

1000
101
CUSTOMER BUSINESS SYSTEM
102
PROCESSOR
104
DATA STORE
108
DATA
APPLICATIONS
110
BUSINESS PROCESSES
112
WORKFLOWS
114
OTHER
107
106
UPDATE INSTALLER COMPONENT
105
USER INTERFACE COMPONENT
CONFLICT RESOLUTION COMPONENT
119
BUSINESS PROCESS COMPONENT
121
114
USER
USER INTERFACE DISPLAYS
INPUT MECHANISMS
116
USER DEVICE
206
200
LIFECYCLE SYSTEM
PROJECT INFORMATION
208
ENVIRONMENT INFORMATION
209
SET OF BUSINESS PROCESSES
SERVICE
202
SERVICE
204
UPDATE INFORMATION
203
UPDATE RECOMMENDATION SERVICE
212
210
UPDATE STATE TRACKING INFORMATION
CODE MERGE INFORMATION
213
211
IMPACT ANALYSIS INFORMATION
REPORT GENERATOR SERVICE
214
Update Facility
103

FIG. 3

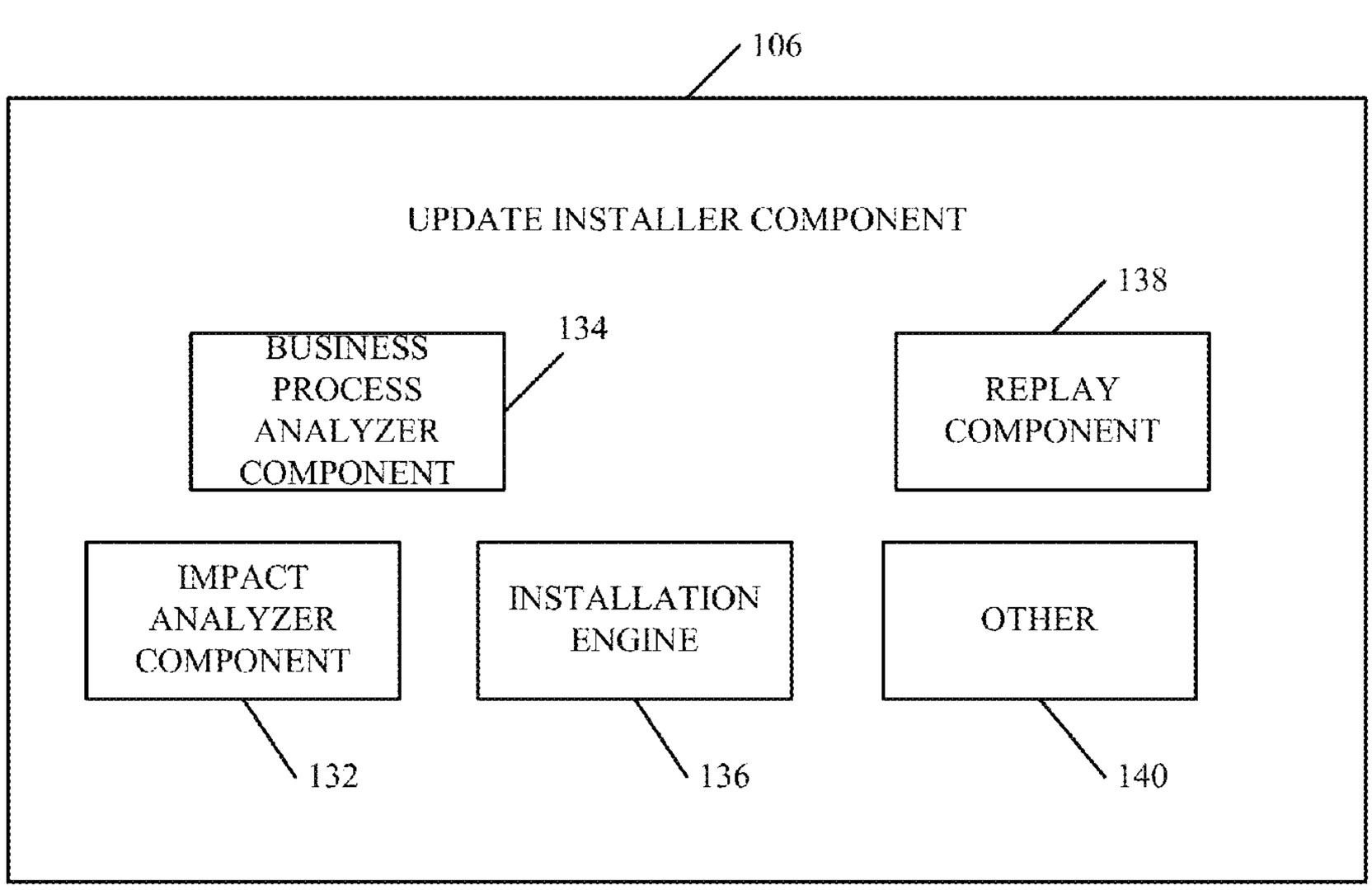

106
UPDATE INSTALLER COMPONENT
BUSINESS PROCESS ANALYZER COMPONENT
134
REPLAY COMPONENT
138
IMPACT ANALYZER COMPONENT
INSTALLATION ENGINE
OTHER
132
136
140

FIG. 4


https://update.lcs.dev.acme.com/download/index
AcmeUpdates X
? J. Doe
Username
Lifecycle Services
Updates
Ax 2012 R3 Update Installer
The ACME Update Installer enables you to download and evaluate updates for your environment.
Download

FIG. 5

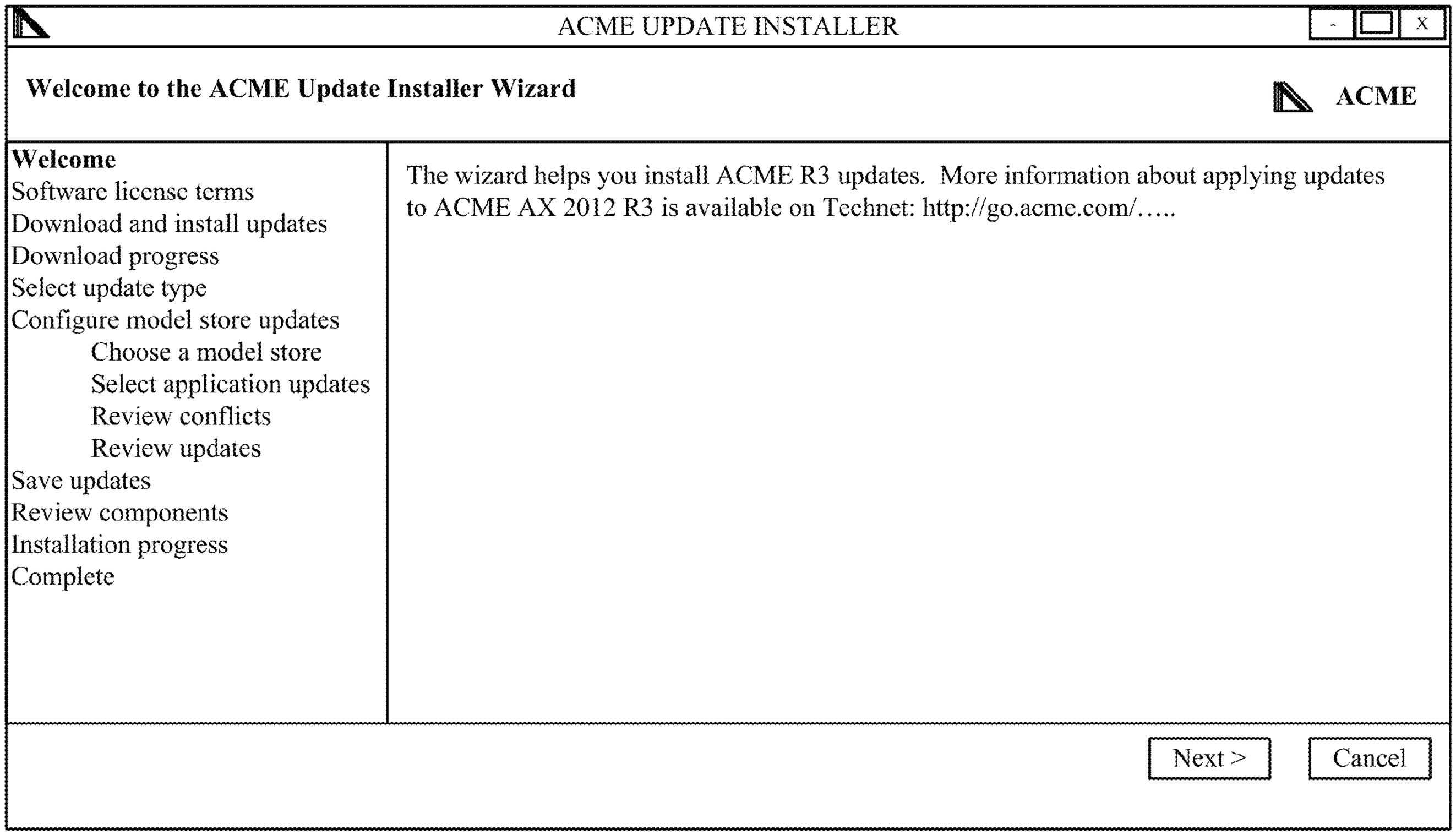
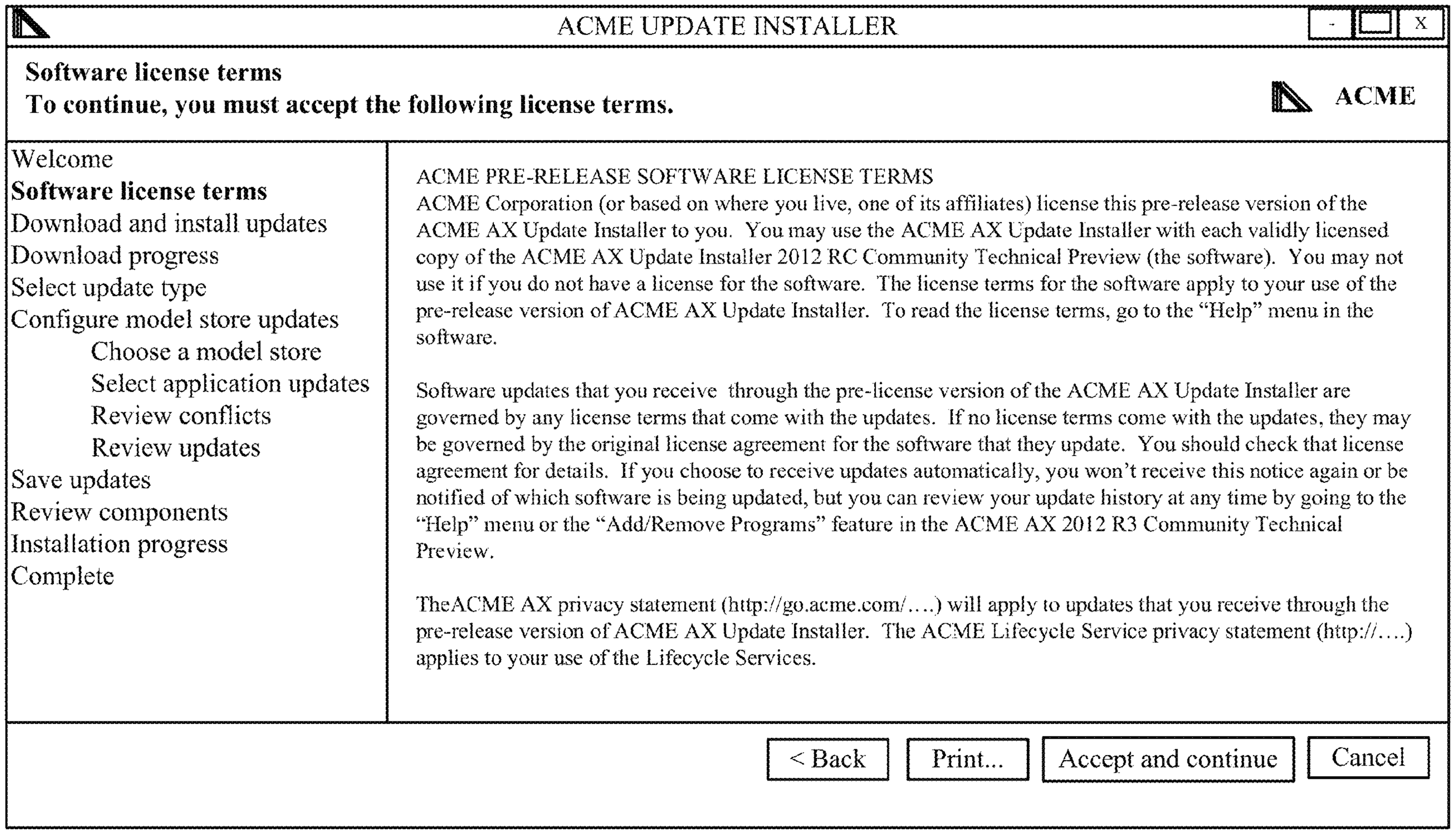

ACME UPDATE INSTALLER
Welcome to the ACME Update Installer Wizard
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
The wizard helps you install ACME R3 updates. More information about applying updates to ACME AX 2012 R3 is available on Technet: http://go.acme.com/.....
Next >
Cancel

FIG. 6


ACME UPDATE INSTALLER
Software license terms
To continue, you must accept the following license terms.
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
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TheACME AX privacy statement (http://go.acme.com/….) will apply to updates that you receive through the pre-release version of ACME AX Update Installer. The ACME Lifecycle Service privacy statement (http://….) applies to your use of the Lifecycle Services.
< Back
Print...
Accept and continue
Cancel

FIG. 7

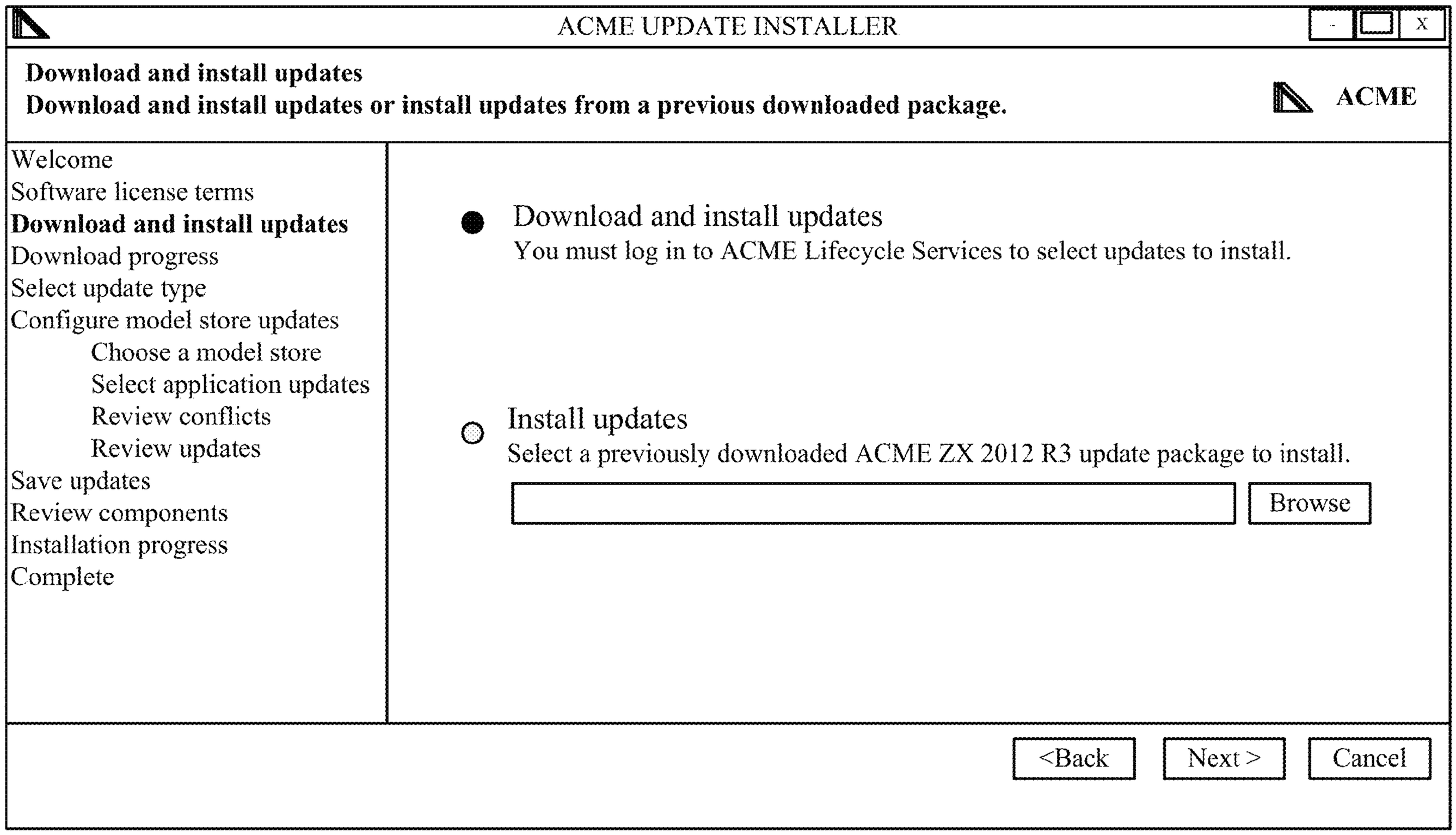

ACME UPDATE INSTALLER
Download and install updates
Download and install updates or install updates from a previous downloaded package.
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
Download and install updates
You must log in to ACME Lifecycle Services to select updates to install.
Install updates
Select a previously downloaded ACME ZX 2012 R3 update package to install.
Browse
<Back
Next >
Cancel

FIG. 8

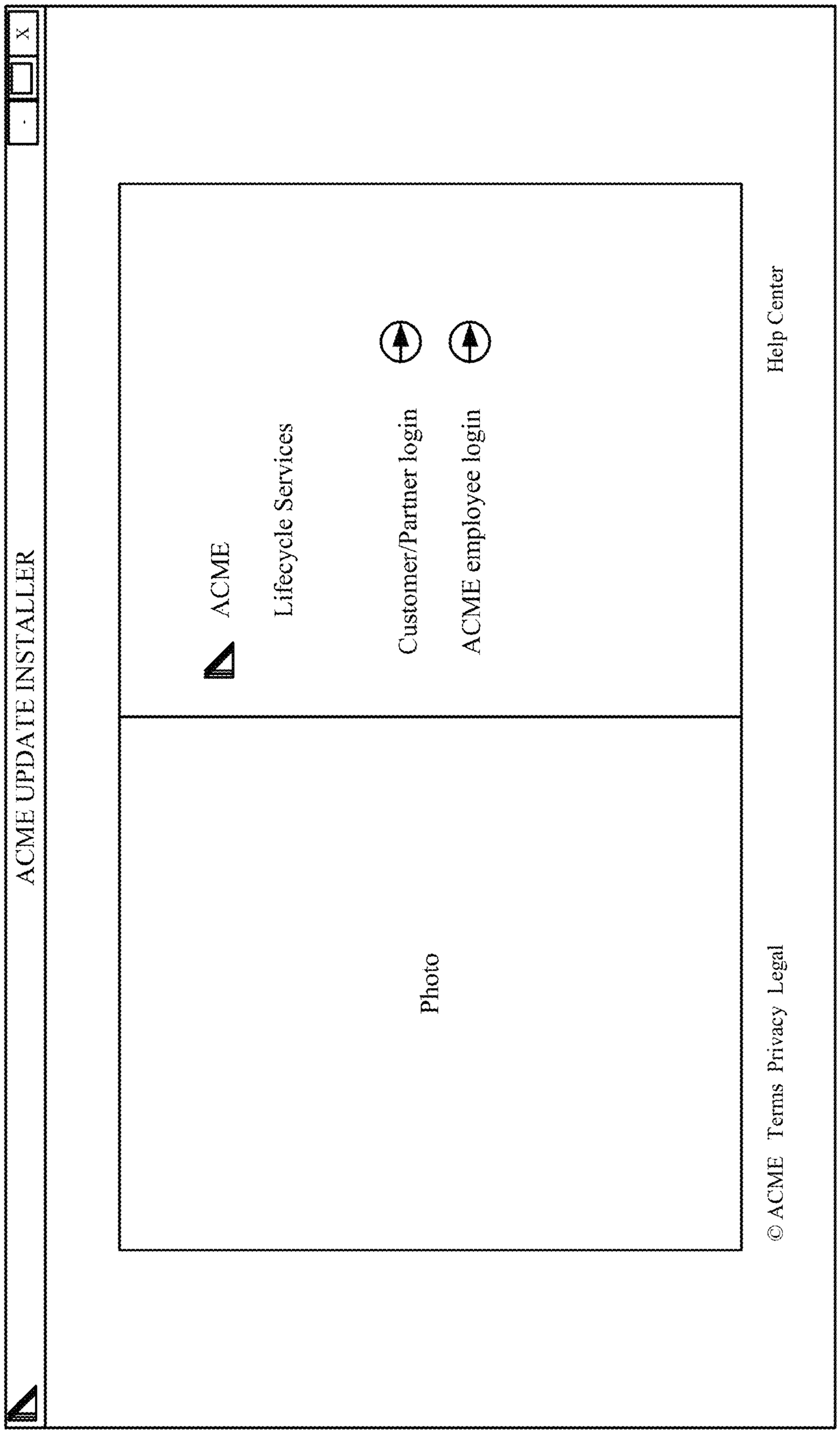

ACME UPDATE INSTALLER
ACME
Lifecycle Services
Customer/Partner login
ACME employee login
Help Center
Photo
© ACME Terms Privacy Legal

FIG. 9

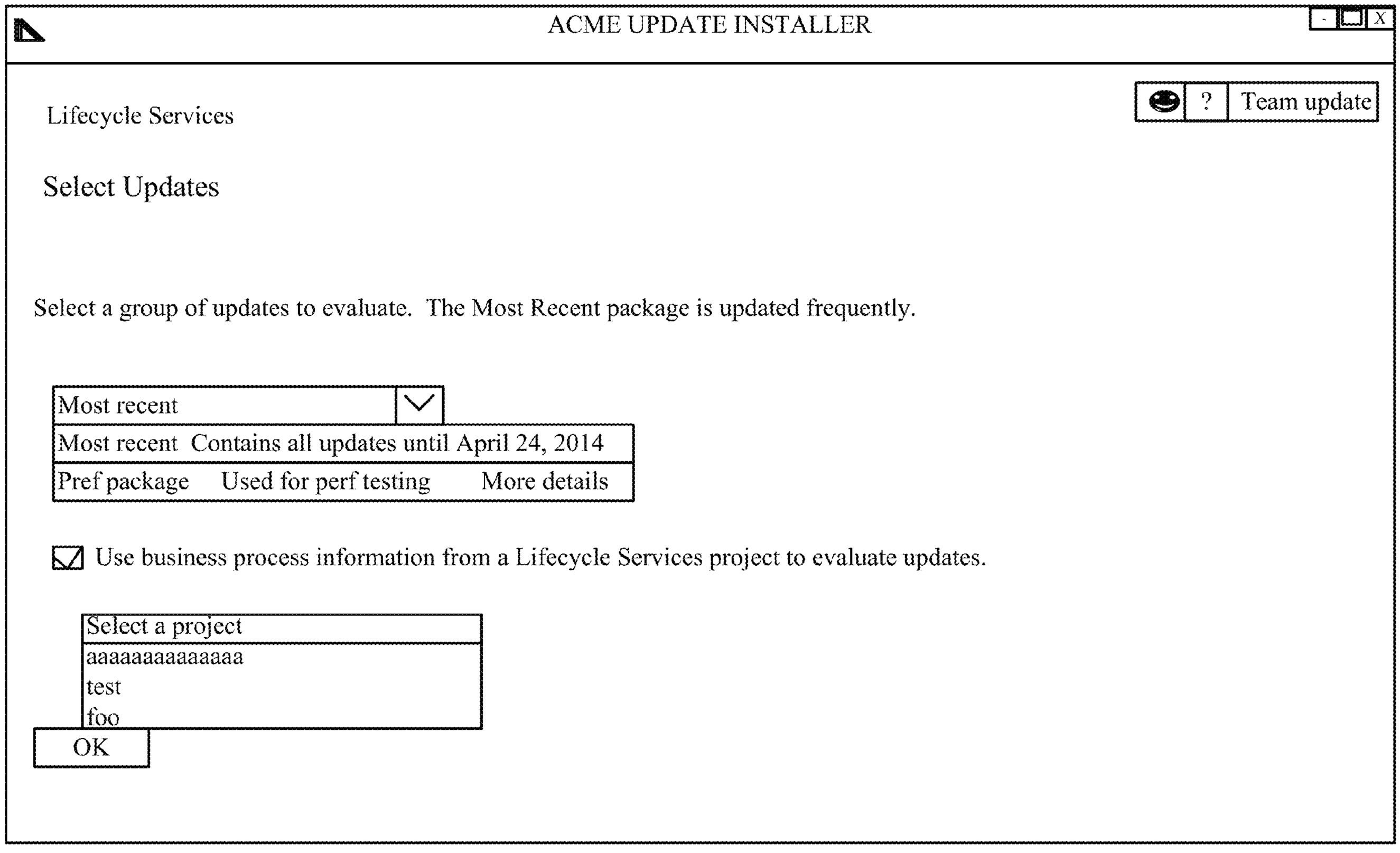

ACME UPDATE INSTALLER
Lifecycle Services
?
Team update
Select Updates
Select a group of updates to evaluate. The Most Recent package is updated frequently.
Most recent
Most recent Contains all updates until April 24, 2014
Pref package Used for perf testing More details
Use business process information from a Lifecycle Services project to evaluate updates.
Select a project
aaaaaaaaaaaaa
test
foo
OK

FIG. 10

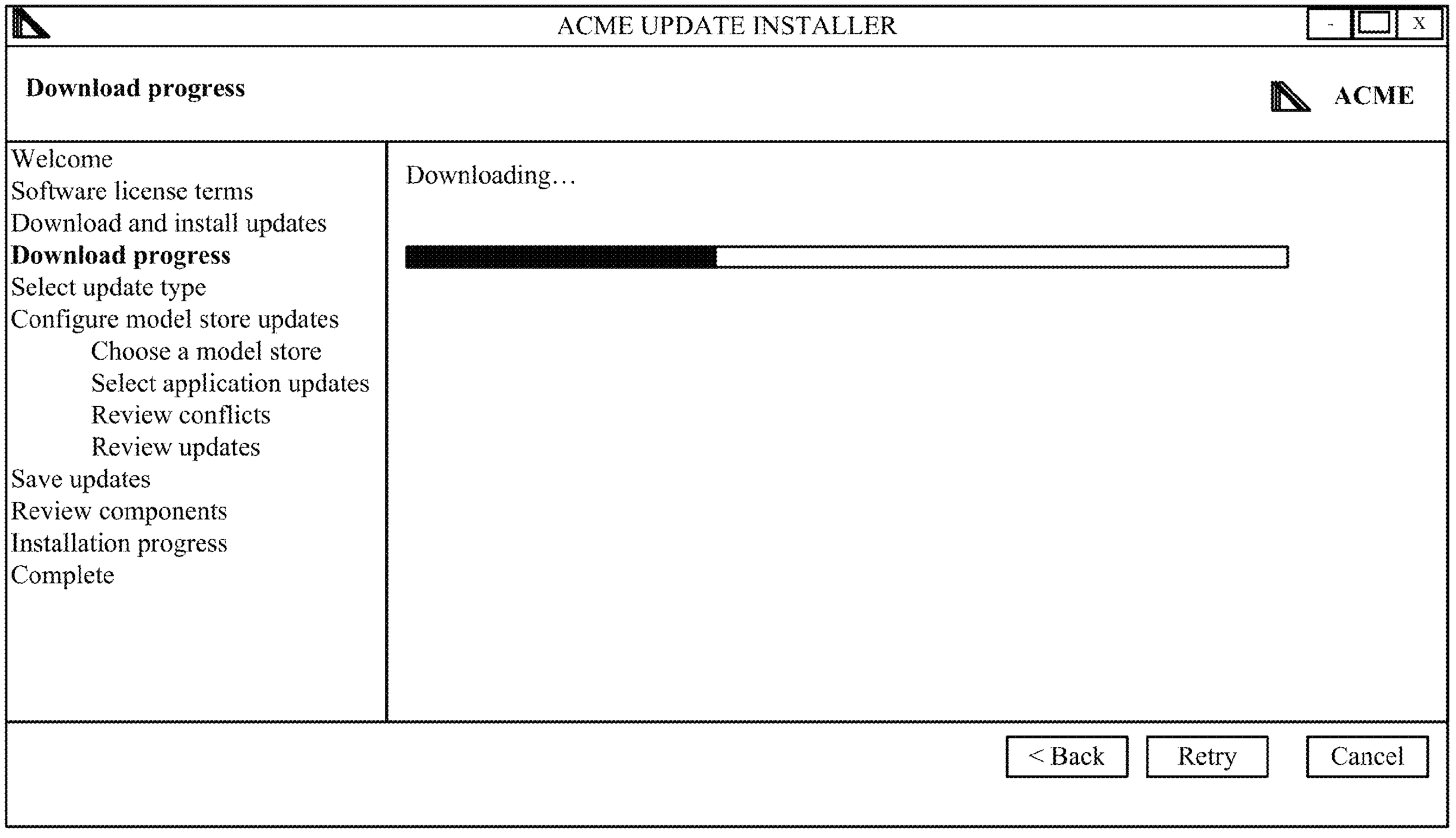

ACME UPDATE INSTALLER
Download progress
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
Downloading…
< Back
Retry
Cancel

FIG. 11

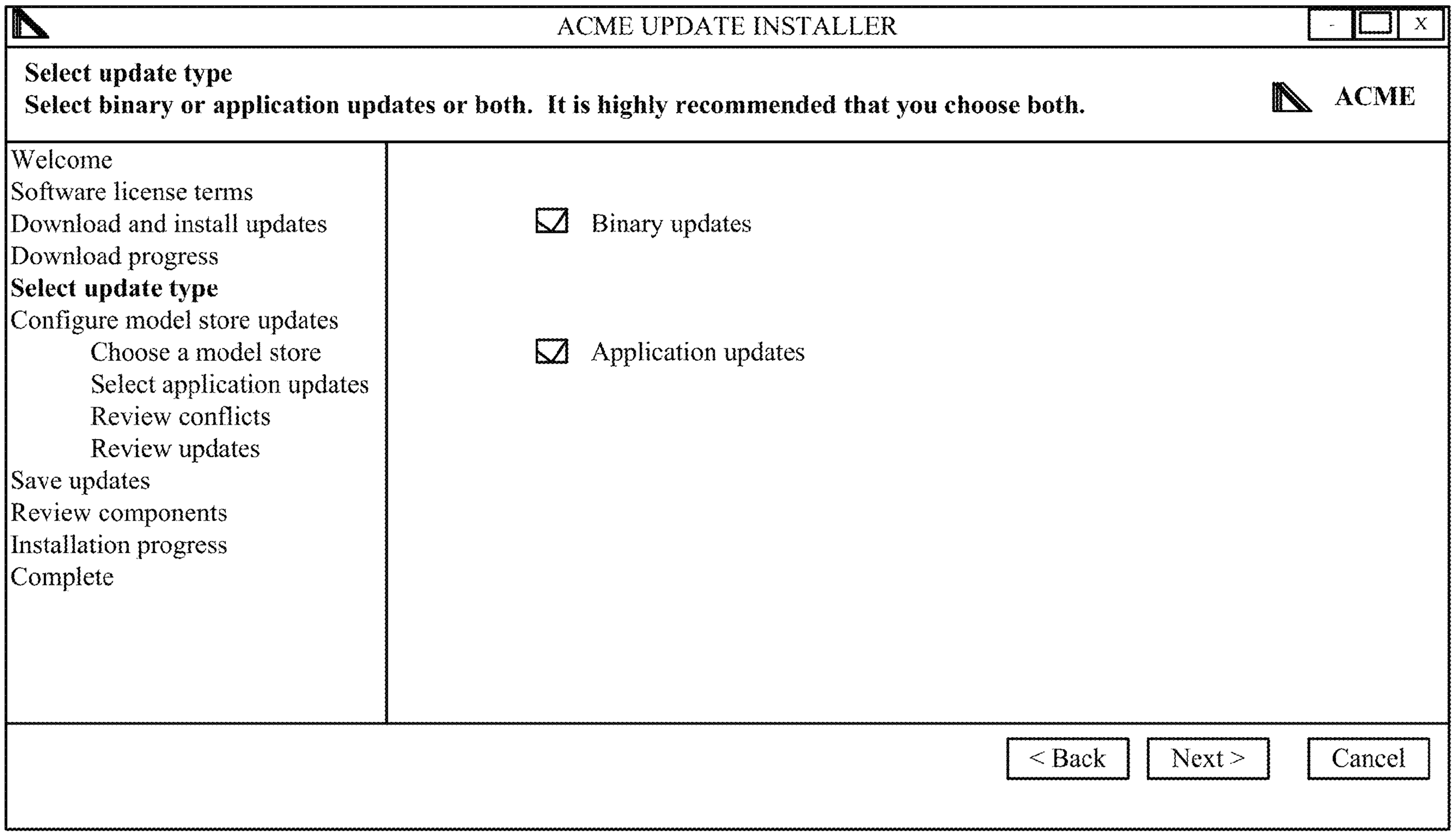

ACME UPDATE INSTALLER
Select update type
Select binary or application updates or both. It is highly recommended that you choose both.
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
Binary updates
Application updates
< Back
Next >
Cancel

FIG. 12

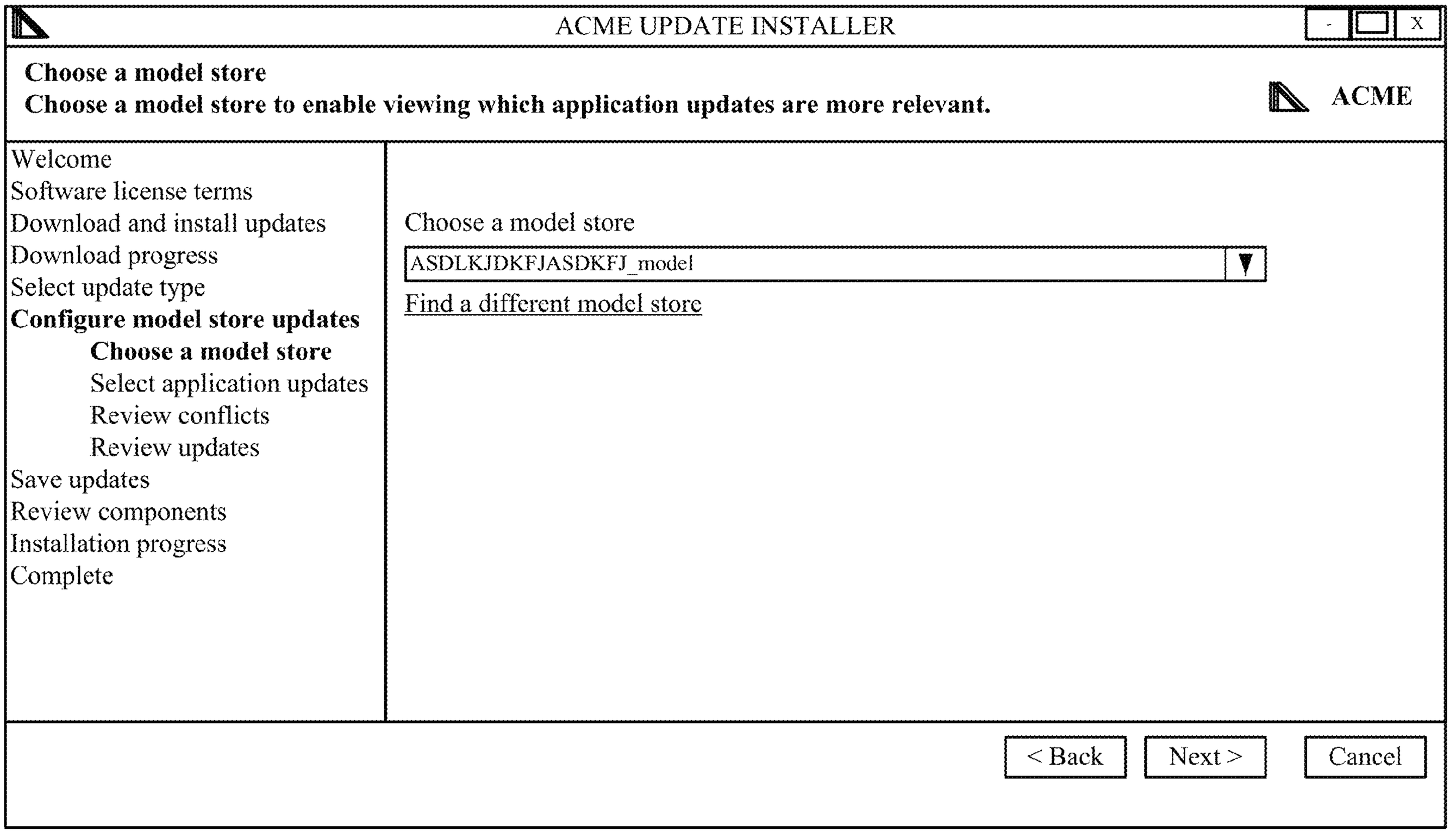

ACME UPDATE INSTALLER
Choose a model store
Choose a model store to enable viewing which application updates are more relevant.
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
Choose a model store
ASDLKJDKFJASDKFJ_model
Find a different model store
< Back
Next >
Cancel

FIG. 13

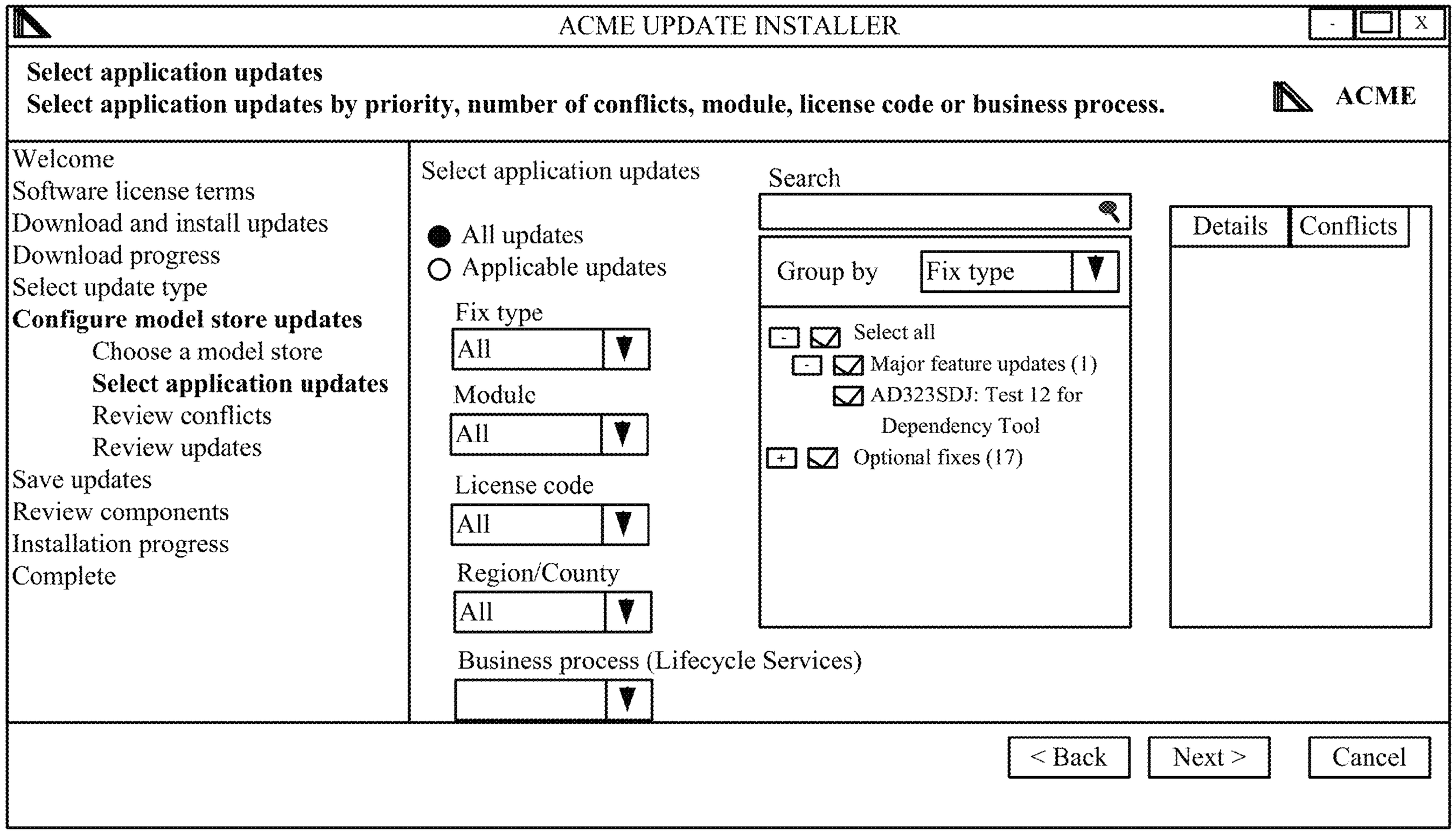

ACME UPDATE INSTALLER
Select application updates
Select application updates by priority, number of conflicts, module, license code or business process.
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
Select application updates
All updates
Applicable updates
Fix type
All
Module
All
License code
All
Region/County
All
Business process (Lifecycle Services)
Search
Group by
Fix type
Select all
Major feature updates (1)
AD323SDJ: Test 12 for Dependency Tool
Optional fixes (17)
Details
Conflicts
< Back
Next >
Cancel

FIG. 14

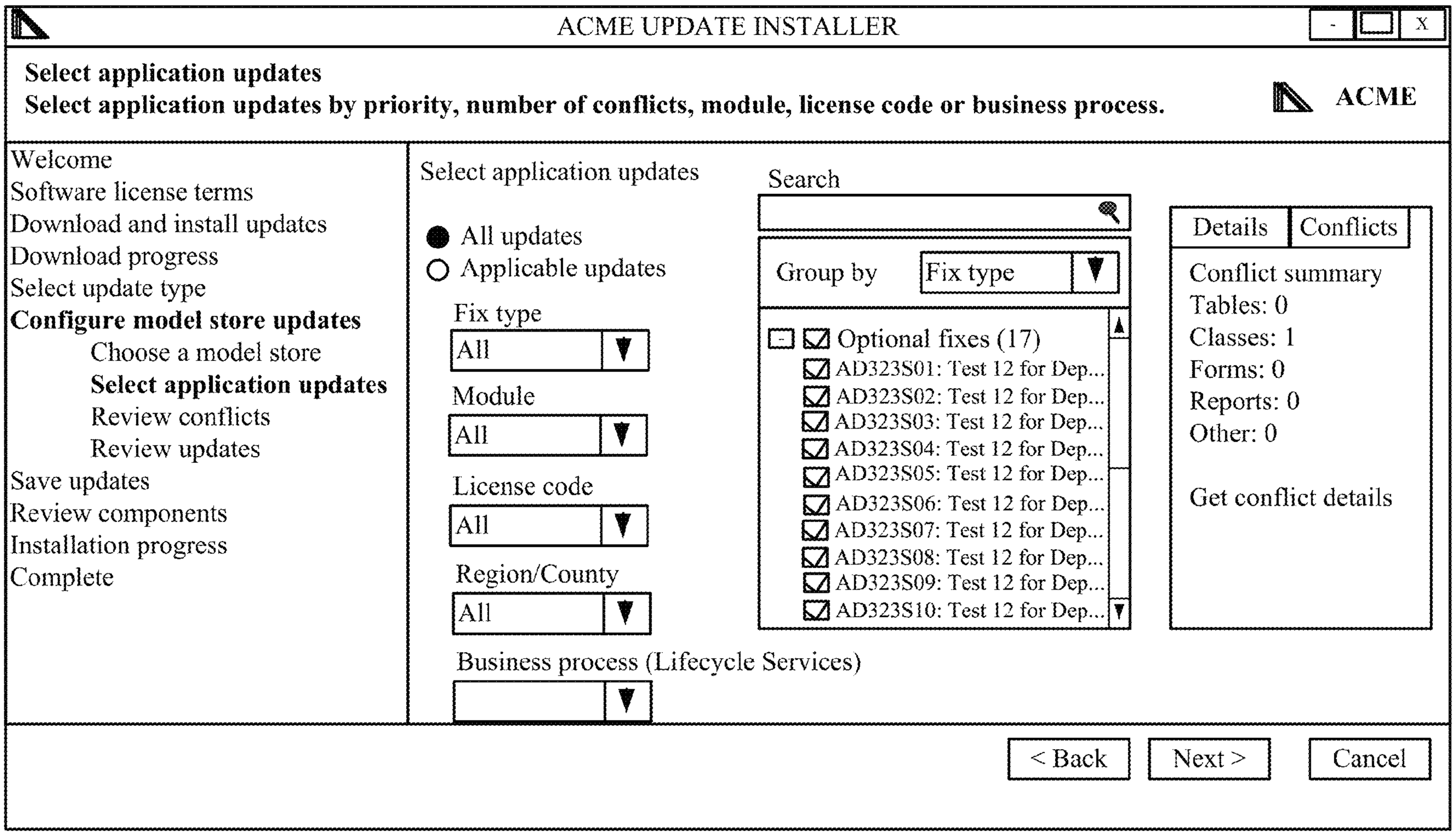

ACME UPDATE INSTALLER
Select application updates
Select application updates by priority, number of conflicts, module, license code or business process.
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
Select application updates
All updates
Applicable updates
Fix type
All
Module
All
License code
All
Region/County
All
Business process (Lifecycle Services)
Search
Group by
Fix type
Optional fixes (17)
AD323S01: Test 12 for Dep...
AD323S02: Test 12 for Dep...
AD323S03: Test 12 for Dep...
AD323S04: Test 12 for Dep...
AD323S05: Test 12 for Dep...
AD323S06: Test 12 for Dep...
AD323S07: Test 12 for Dep...
AD323S08: Test 12 for Dep...
AD323S09: Test 12 for Dep...
AD323S10: Test 12 for Dep...
Details
Conflicts
Conflict summary
Tables: 0
Classes: 1
Forms: 0
Reports: 0
Other: 0
Get conflict details
< Back
Next >
Cancel

FIG. 15

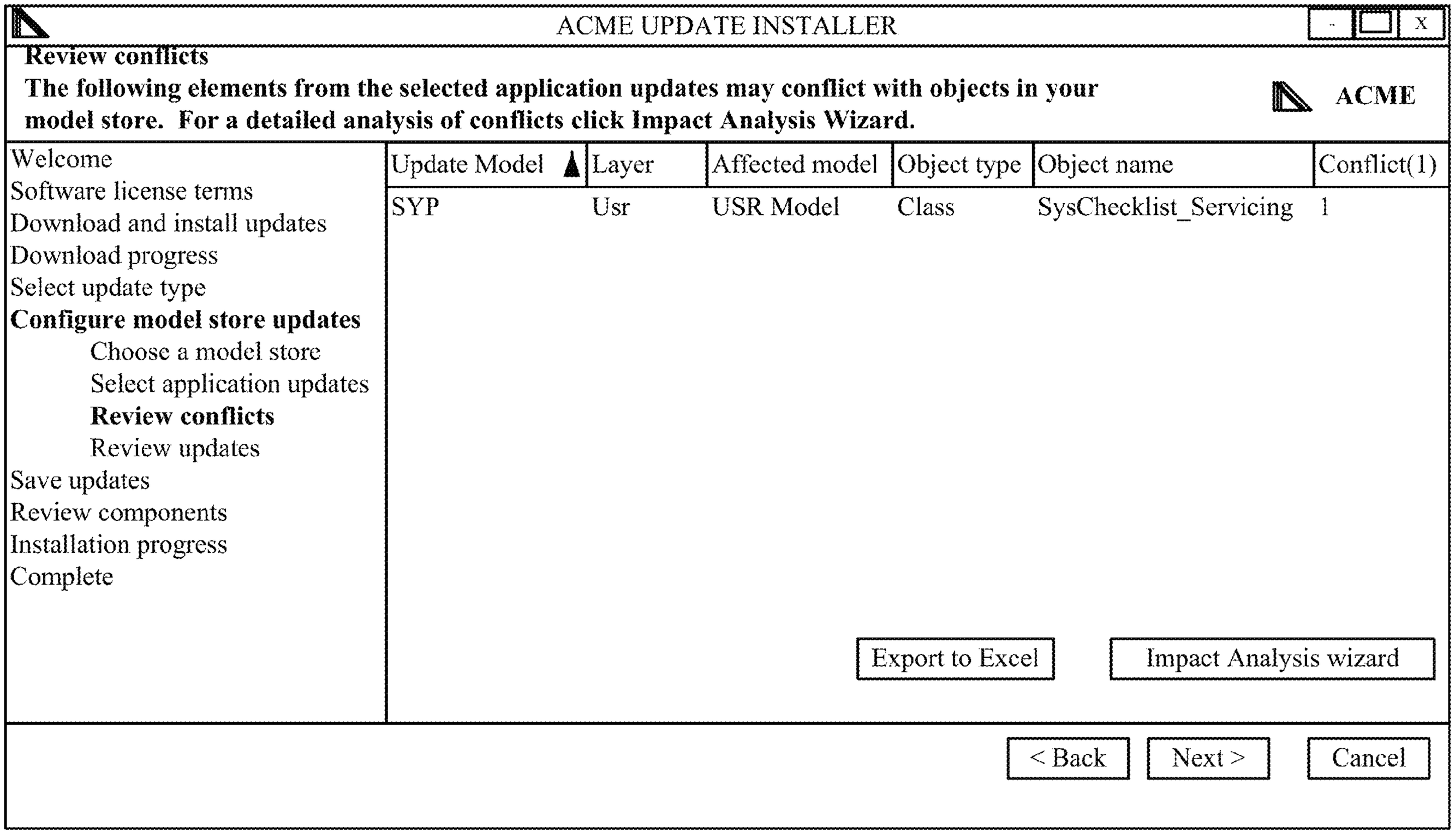

ACME UPDATE INSTALLER
Review conflicts
The following elements from the selected application updates may conflict with objects in your model store. For a detailed analysis of conflicts click Impact Analysis Wizard.
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
Update Model
Layer
Affected model
Object type
Object name
Conflict(1)
SYP
Usr
USR Model
Class
SysChecklist_Servicing
1
Export to Excel
Impact Analysis wizard
< Back
Next >
Cancel

FIG. 16

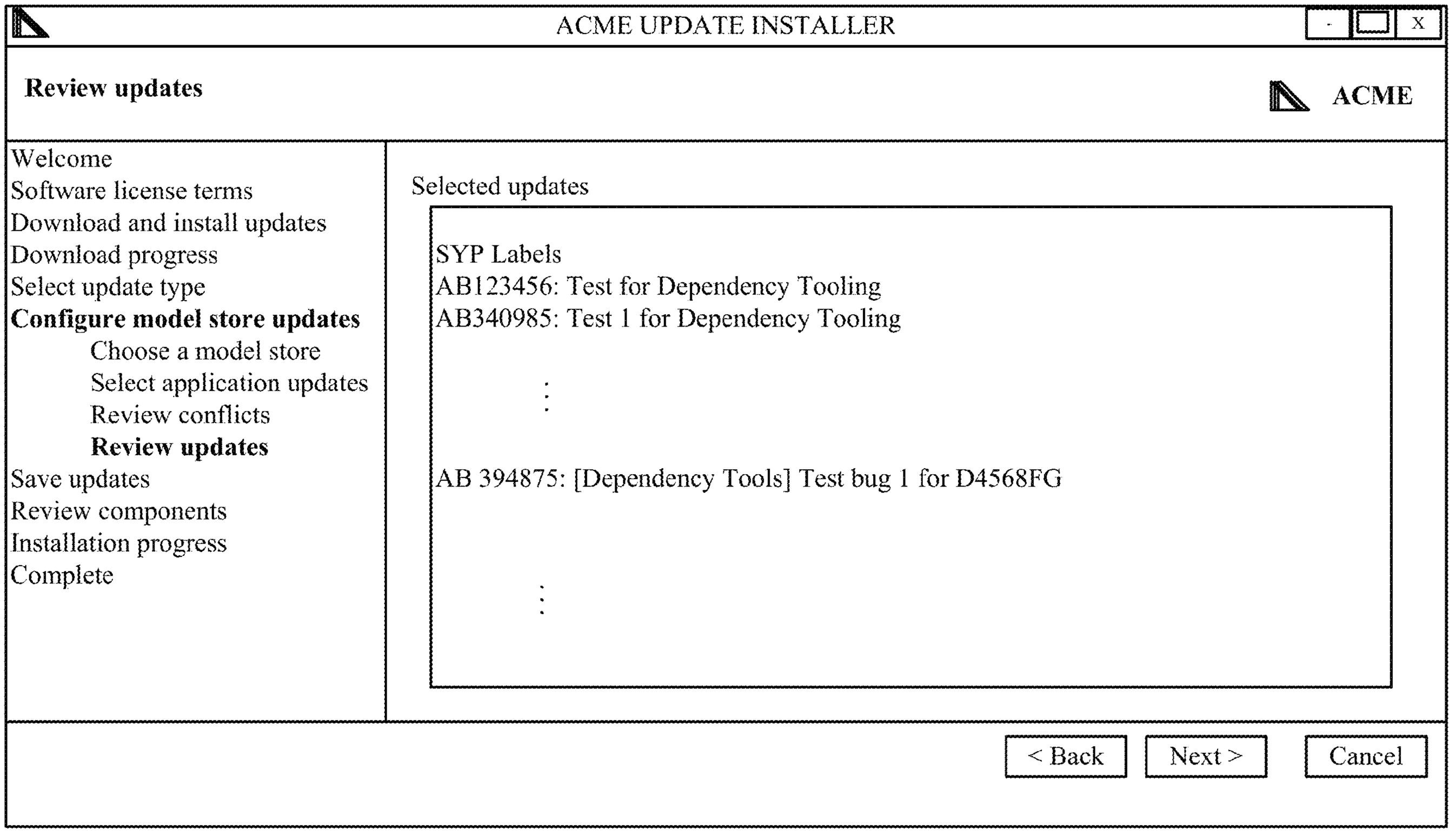

ACME UPDATE INSTALLER
Review updates
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
Selected updates
SYP Labels
AB123456: Test for Dependency Tooling
AB340985: Test 1 for Dependency Tooling
AB 394875: [Dependency Tools] Test bug 1 for D4568FG
< Back
Next >
Cancel

FIG. 17

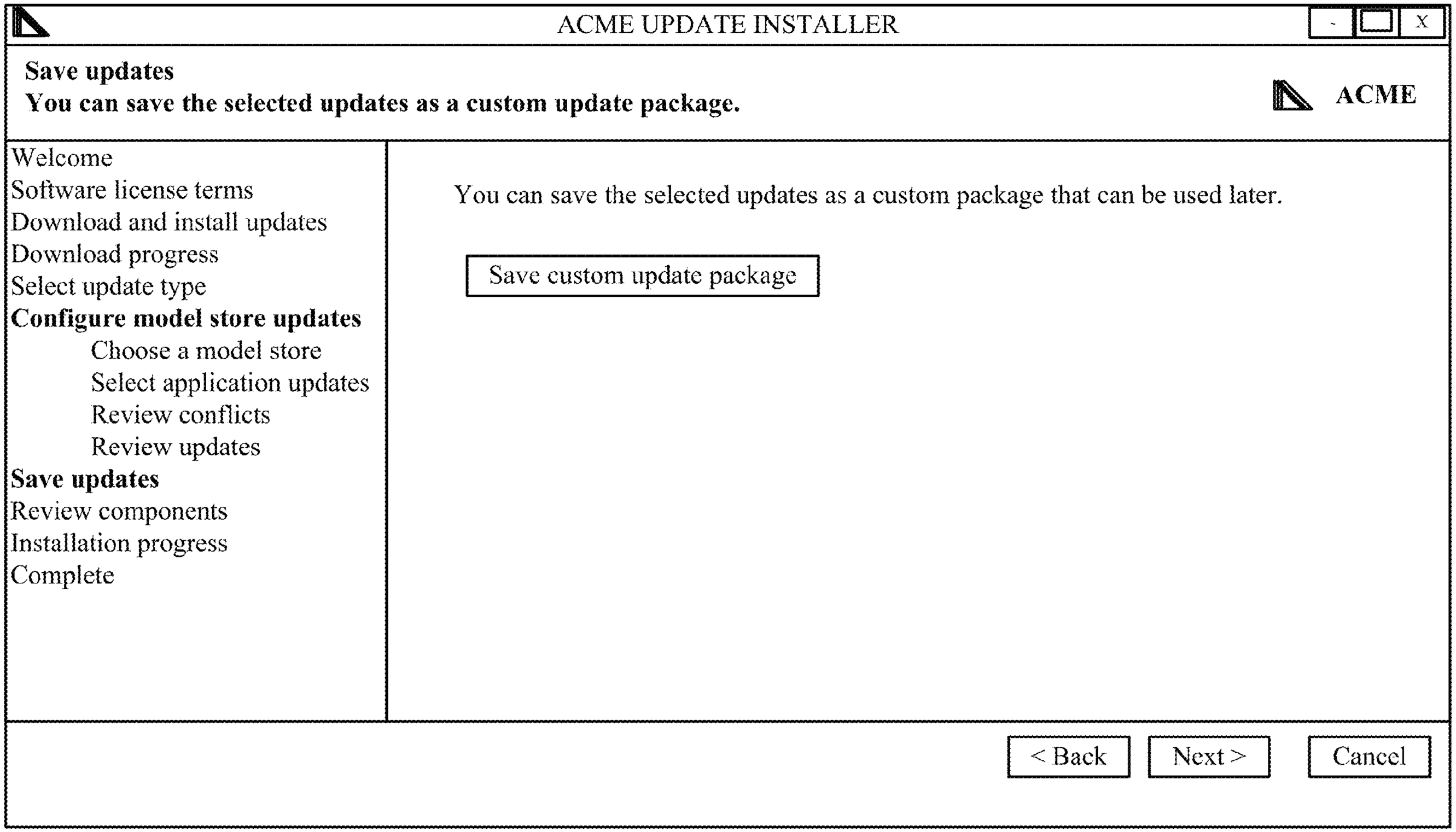

ACME UPDATE INSTALLER
Save updates
You can save the selected updates as a custom update package.
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
You can save the selected updates as a custom package that can be used later.
Save custom update package
< Back
Next >
Cancel

FIG. 18

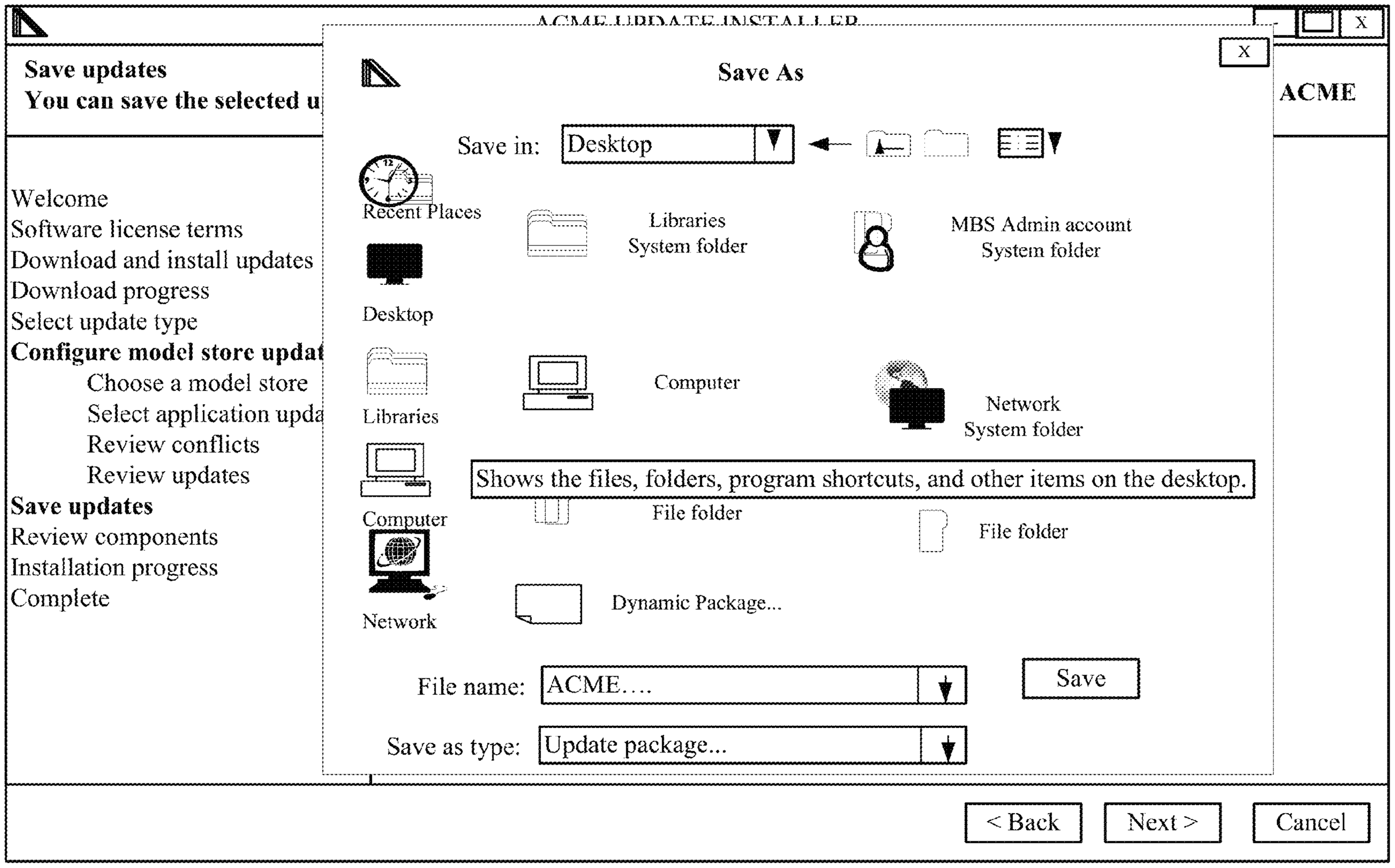

ACME UPDATE INSTALLER
Save updates
You can save the selected u
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updat
Choose a model store
Select application upda
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
Save As
Save in: Desktop
Recent Places
Desktop
Libraries
Computer
Network
Libraries
System folder
MBS Admin account
System folder
Computer
Network
System folder
Shows the files, folders, program shortcuts, and other items on the desktop.
File folder
File folder
Dynamic Package...
File name: ACME....
Save as type: Update package...
Save
< Back
Next >
Cancel

FIG. 19

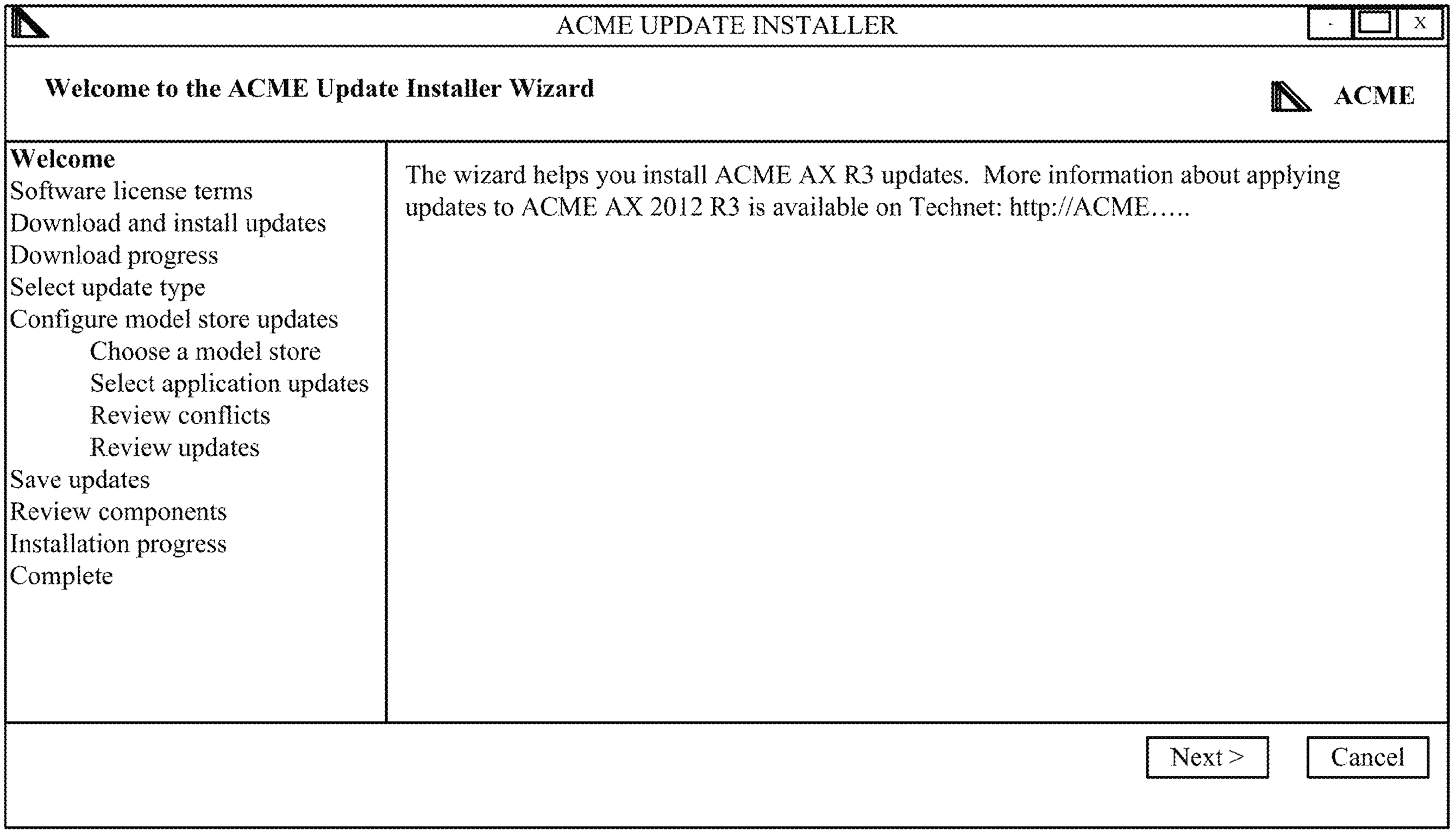
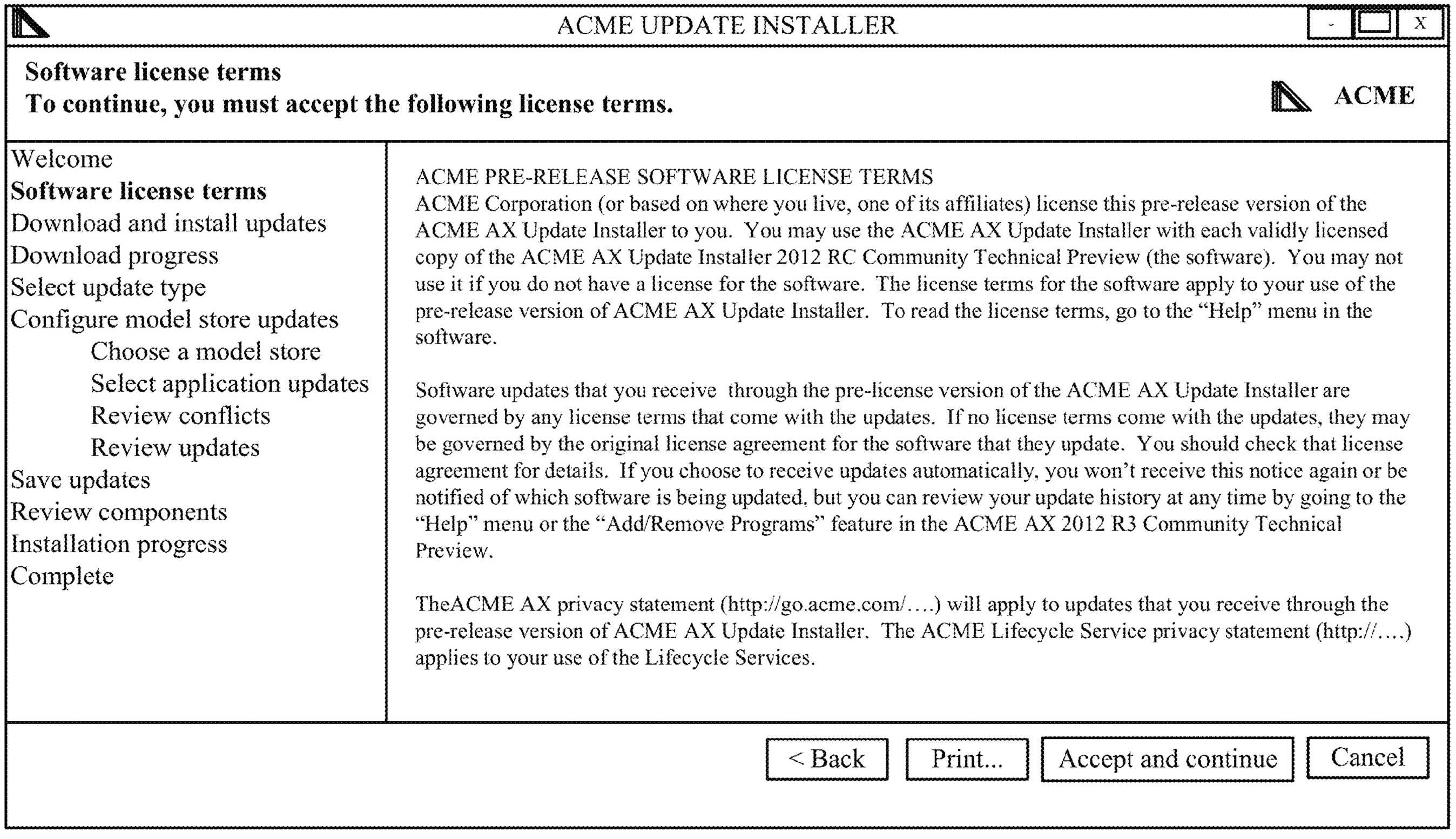

ACME UPDATE INSTALLER
Welcome to the ACME Update Installer Wizard
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
The wizard helps you install ACME AX R3 updates. More information about applying updates to ACME AX 2012 R3 is available on Technet: http://ACME.....
Next >
Cancel

FIG. 20


ACME UPDATE INSTALLER
- X
Software license terms
To continue, you must accept the following license terms.
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
ACME PRE-RELEASE SOFTWARE LICENSE TERMS
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< Back
Print...
Accept and continue
Cancel

FIG. 21

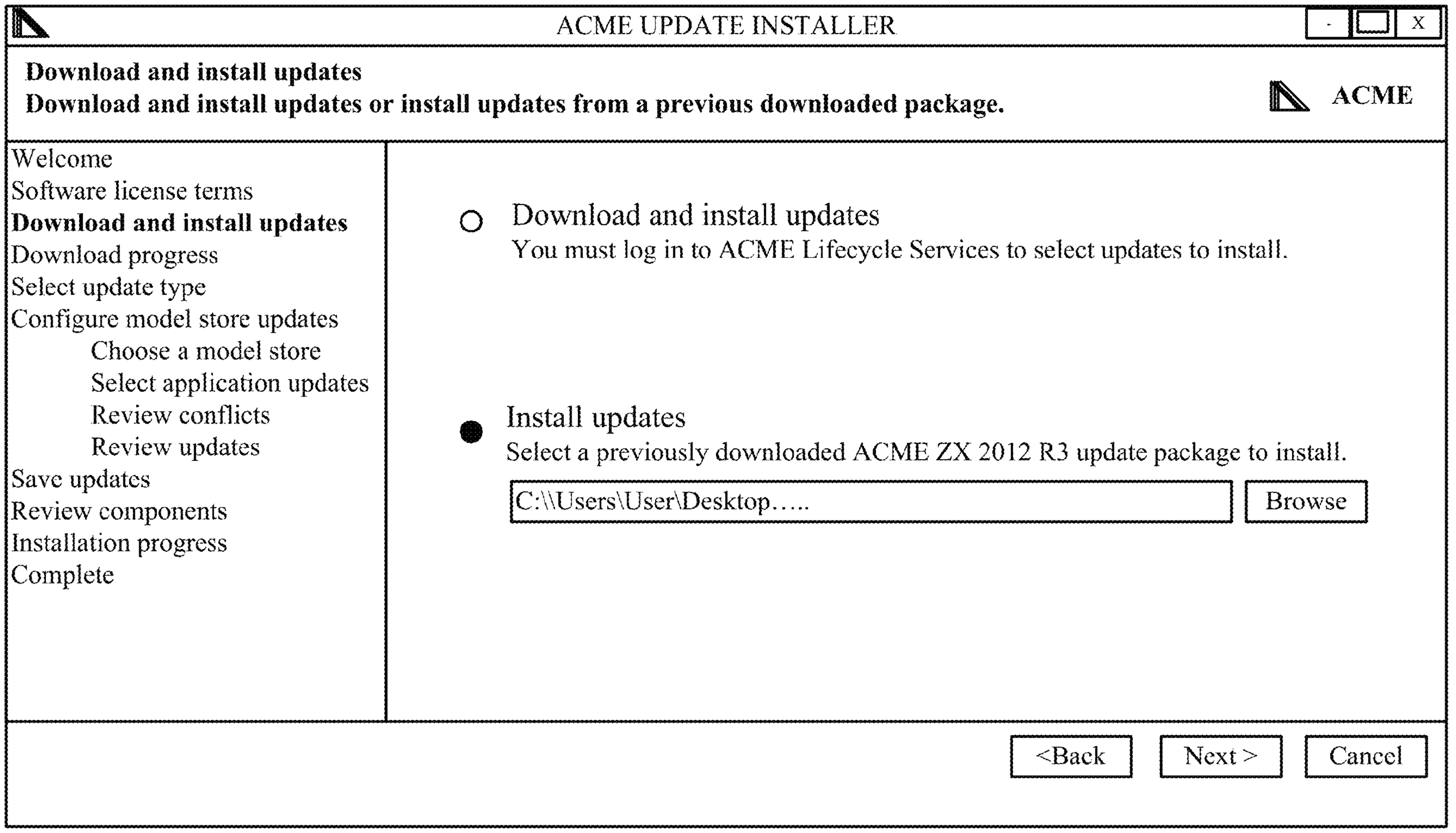
ACME UPDATE INSTALLER
Download and install updates
Download and install updates or install updates from a previous downloaded package.
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
Download and install updates
You must log in to ACME Lifecycle Services to select updates to install.
Install updates
Select a previously downloaded ACME ZX 2012 R3 update package to install.
C:\\Users\User\Desktop…..
Browse
<Back
Next >
Cancel

FIG. 22

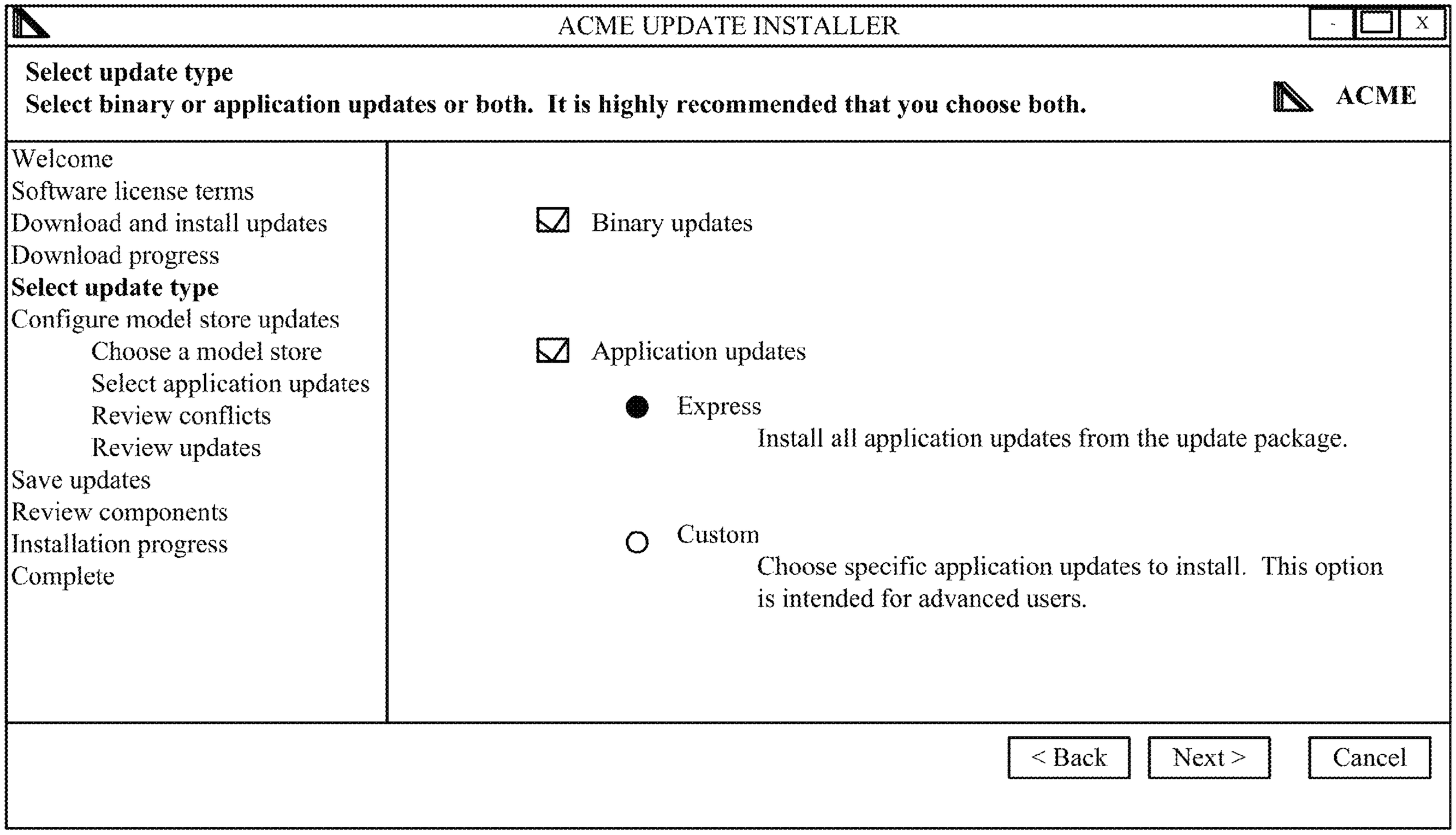
ACME UPDATE INSTALLER
Select update type
Select binary or application updates or both. It is highly recommended that you choose both.
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
Binary updates
Application updates
Express
Install all application updates from the update package.
Custom
Choose specific application updates to install. This option is intended for advanced users.
< Back
Next >
Cancel

FIG. 23

ACME UPDATE INSTALLER

Choose a model store
Choose a model store to enable viewing which application updates are more relevant.

ACME

- Welcome
- Software license terms
- Download and install updates
- Download progress
- Select update type
- **Configure model store updates**
  - **Choose a model store**
  - Select application updates
  - Review conflicts
  - Review updates
- Save updates
- Review components
- Installation progress
- Complete

Choose a model store

ASDLKJDKFJASDKFJ_model

Find a different model store

< Back | Next > | Cancel

FIG. 24

ACME UPDATE INSTALLER

Review conflicts

The following elements from the selected application updates may conflict with objects in your model store. For a detailed analysis of conflicts click Impact Analysis Wizard.

ACME

- Welcome
- Software license terms
- Download and install updates
- Download progress
- Select update type
- **Configure model store updates**
  - Choose a model store
  - Select application updates
  - **Review conflicts**
  - Review updates
- Save updates
- Review components
- Installation progress
- Complete

Update Model	Layer	Affected model	Object type	Object name	Conflict(1)
SYP	Usr	USR Model	Class	SysChecklist_Servicing	1

Export to Excel | Impact Analysis wizard

< Back | Next > | Cancel

FIG. 25

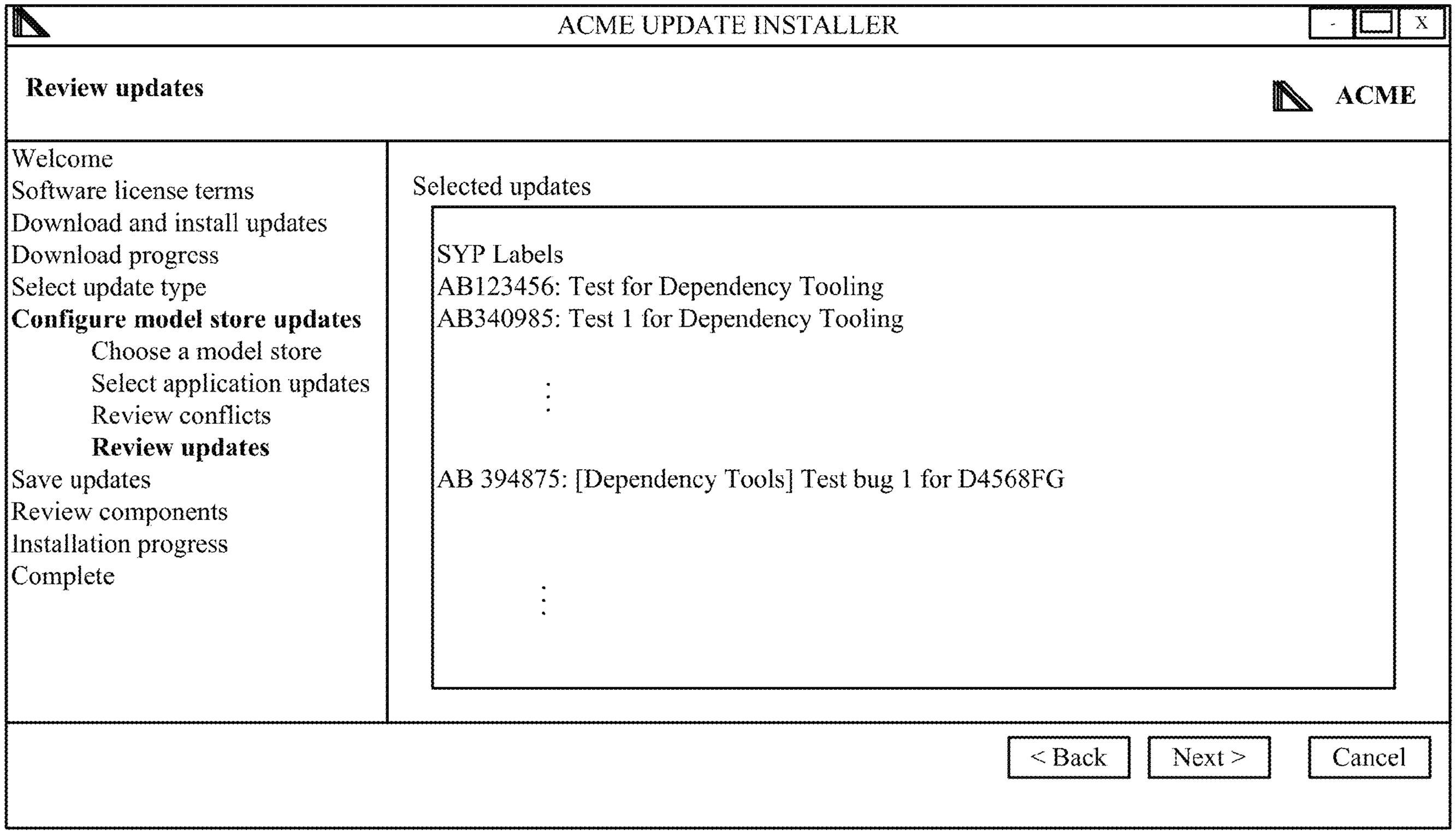
ACME UPDATE INSTALLER
Review updates
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
Selected updates
SYP Labels
AB123456: Test for Dependency Tooling
AB340985: Test 1 for Dependency Tooling
AB 394875: [Dependency Tools] Test bug 1 for D4568FG
< Back
Next >
Cancel

FIG. 26

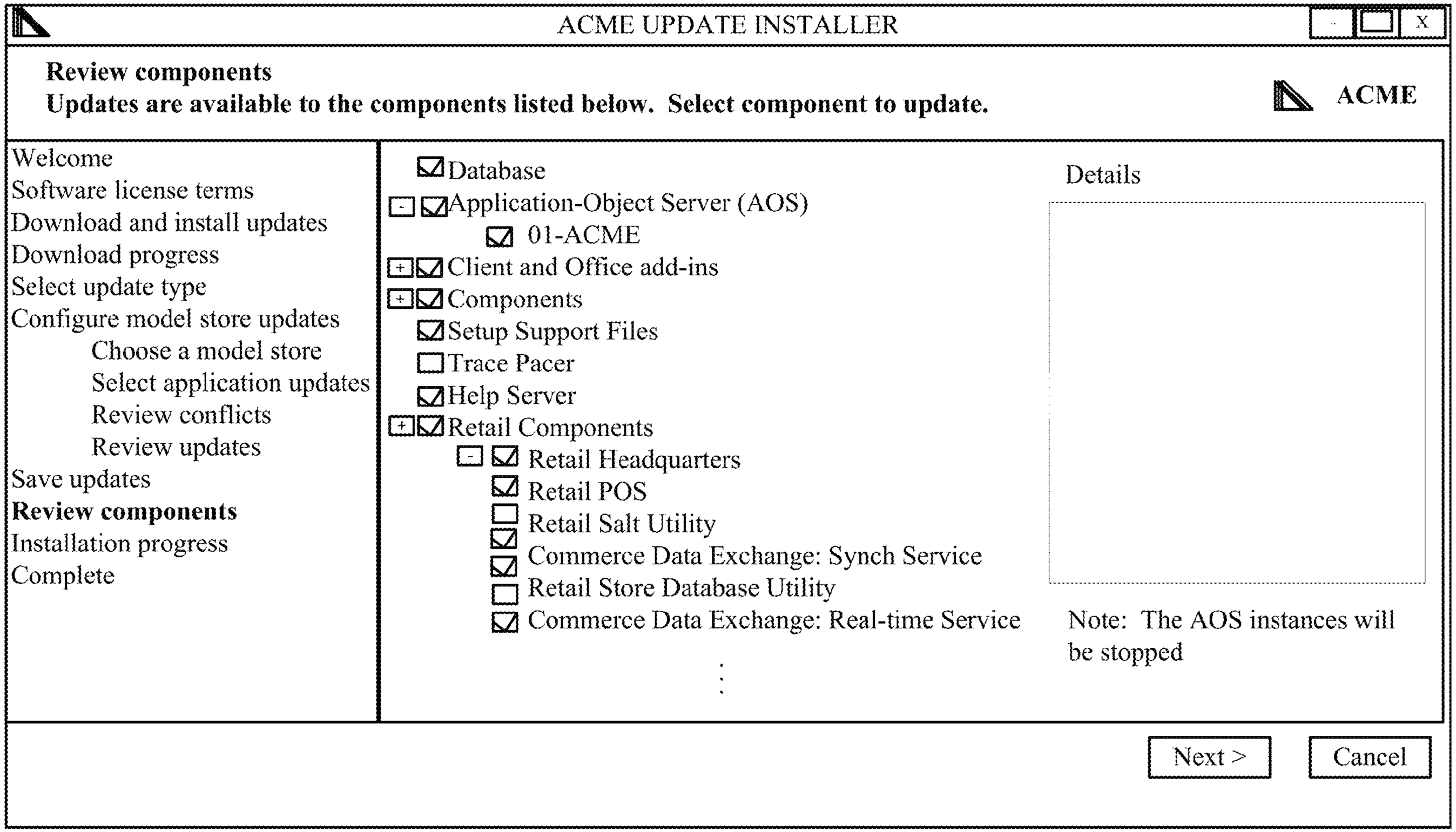
ACME UPDATE INSTALLER
Review components
Updates are available to the components listed below. Select component to update.
ACME
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete
Database
Application-Object Server (AOS)
01-ACME
Client and Office add-ins
Components
Setup Support Files
Trace Pacer
Help Server
Retail Components
Retail Headquarters
Retail POS
Retail Salt Utility
Commerce Data Exchange: Synch Service
Retail Store Database Utility
Commerce Data Exchange: Real-time Service
Details
Note: The AOS instances will be stopped
Next >
Cancel

FIG. 27

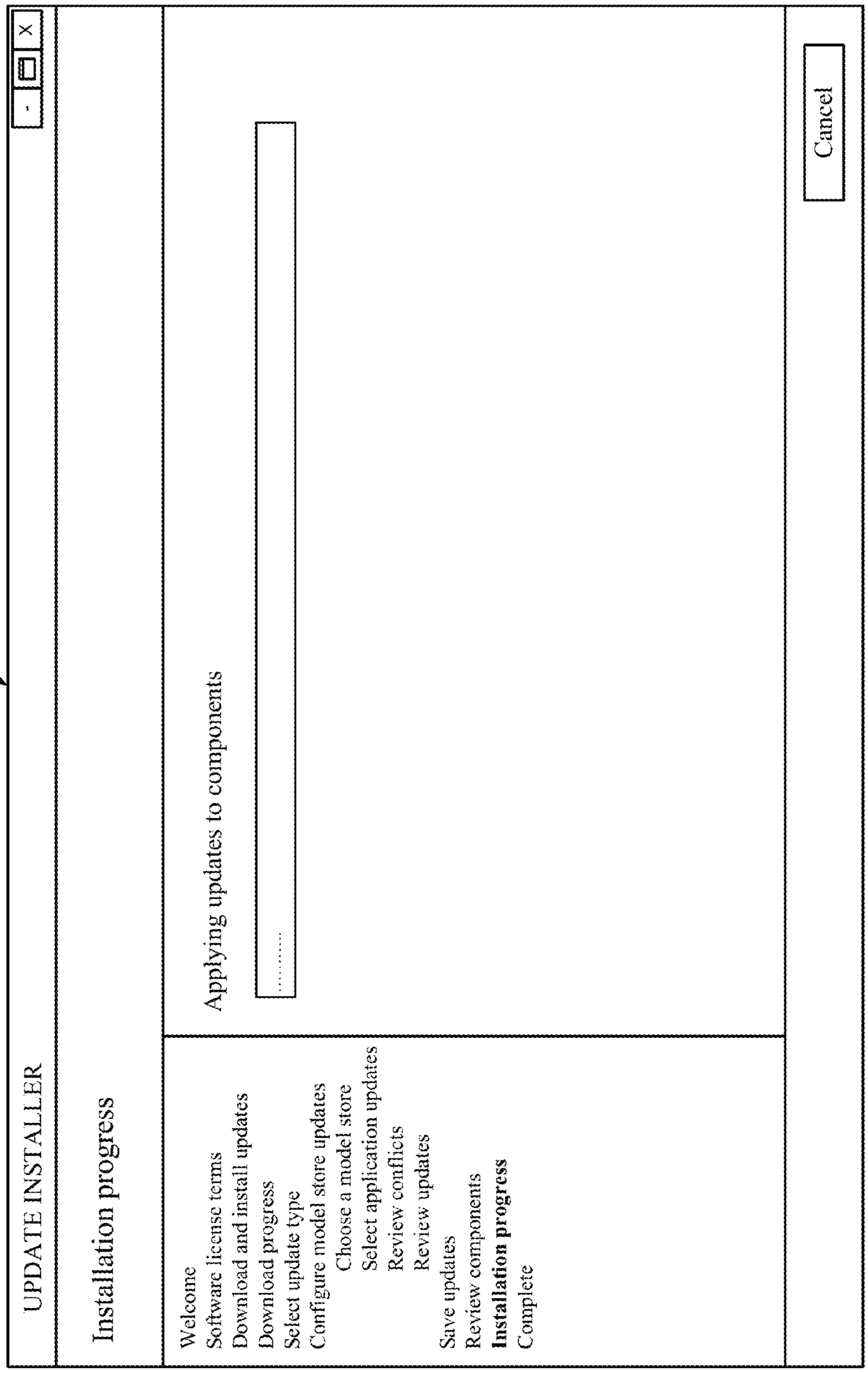
540
Cancel
Applying updates to components
UPDATE INSTALLER
Installation progress
Welcome
Software license terms
Download and install updates
Download progress
Select update type
Configure model store updates
Choose a model store
Select application updates
Review conflicts
Review updates
Save updates
Review components
Installation progress
Complete

FIG. 28

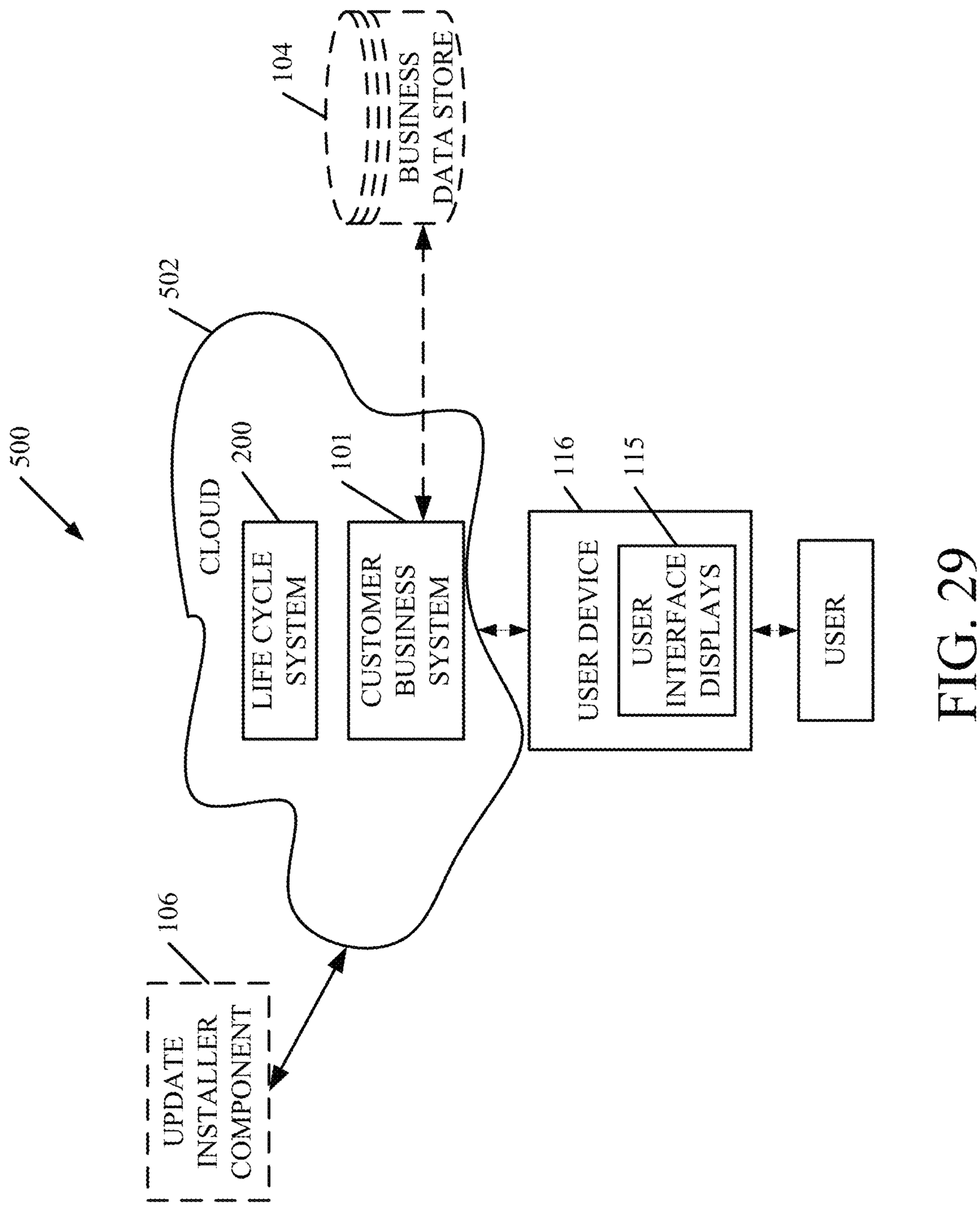
500
502
CLOUD
200
LIFE CYCLE SYSTEM
101
CUSTOMER BUSINESS SYSTEM
104
BUSINESS DATA STORE
116
USER DEVICE
115
USER INTERFACE DISPLAYS
USER
106
UPDATE INSTALLER COMPONENT

FIG. 29

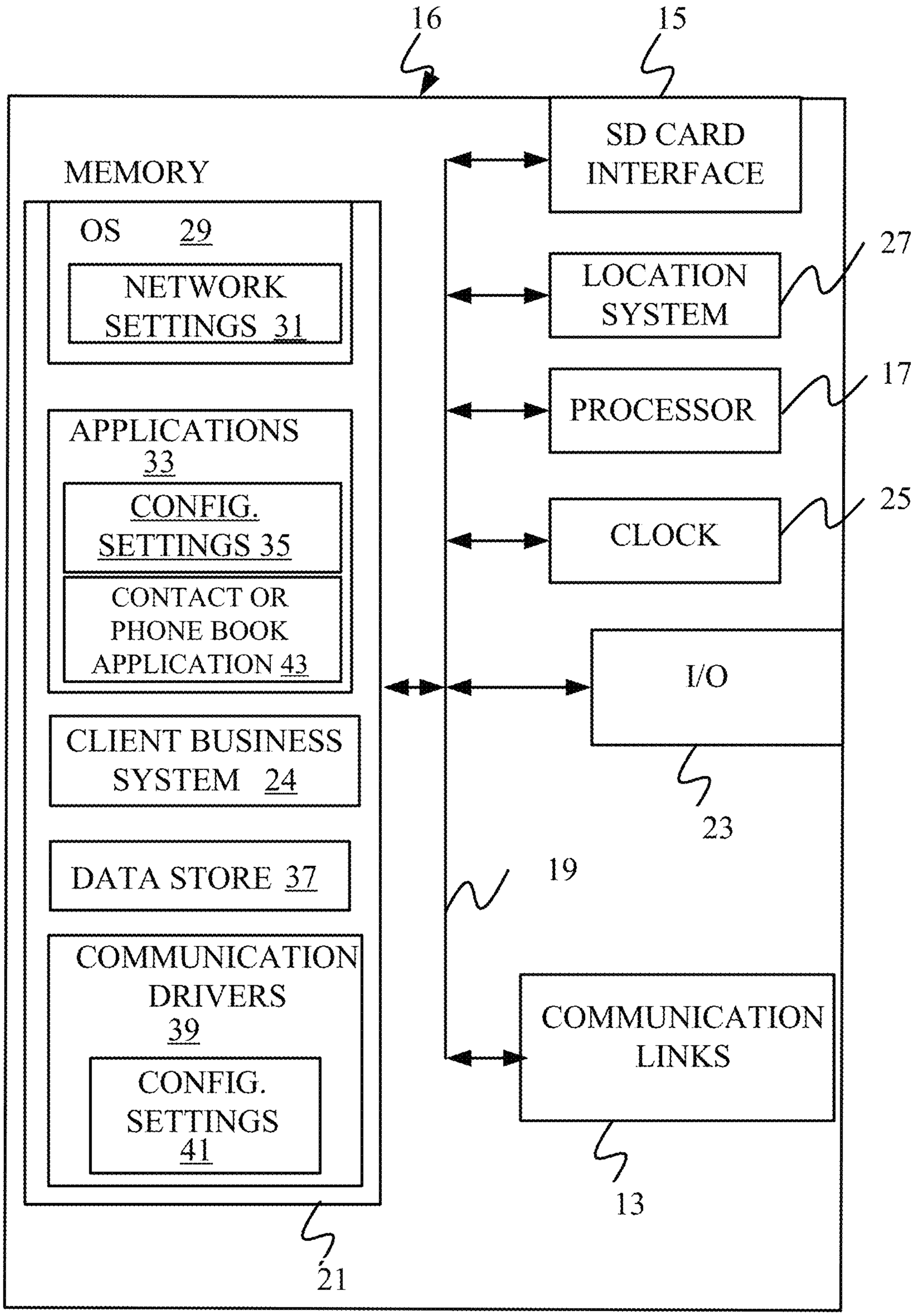
16
15
MEMORY
OS 29
NETWORK SETTINGS 31
APPLICATIONS 33
CONFIG. SETTINGS 35
CONTACT OR PHONE BOOK APPLICATION 43
CLIENT BUSINESS SYSTEM 24
DATA STORE 37
COMMUNICATION DRIVERS 39
CONFIG. SETTINGS 41
21
SD CARD INTERFACE
LOCATION SYSTEM
27
PROCESSOR
17
CLOCK
25
I/O
23
19
COMMUNICATION LINKS
13

FIG. 30

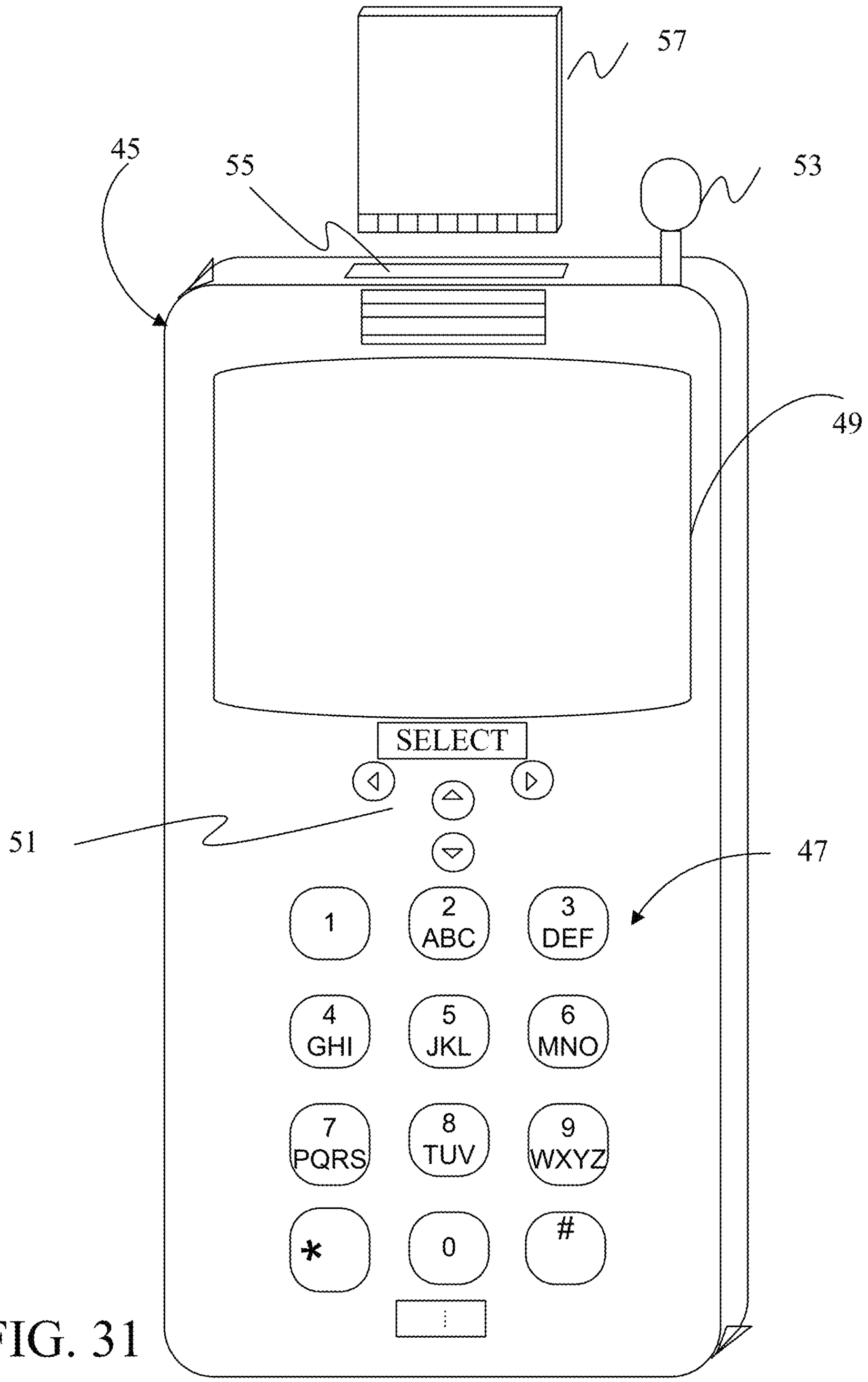
57
45
55
53
49
SELECT
51
47
1
2 ABC
3 DEF
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
*
0
#

FIG. 31

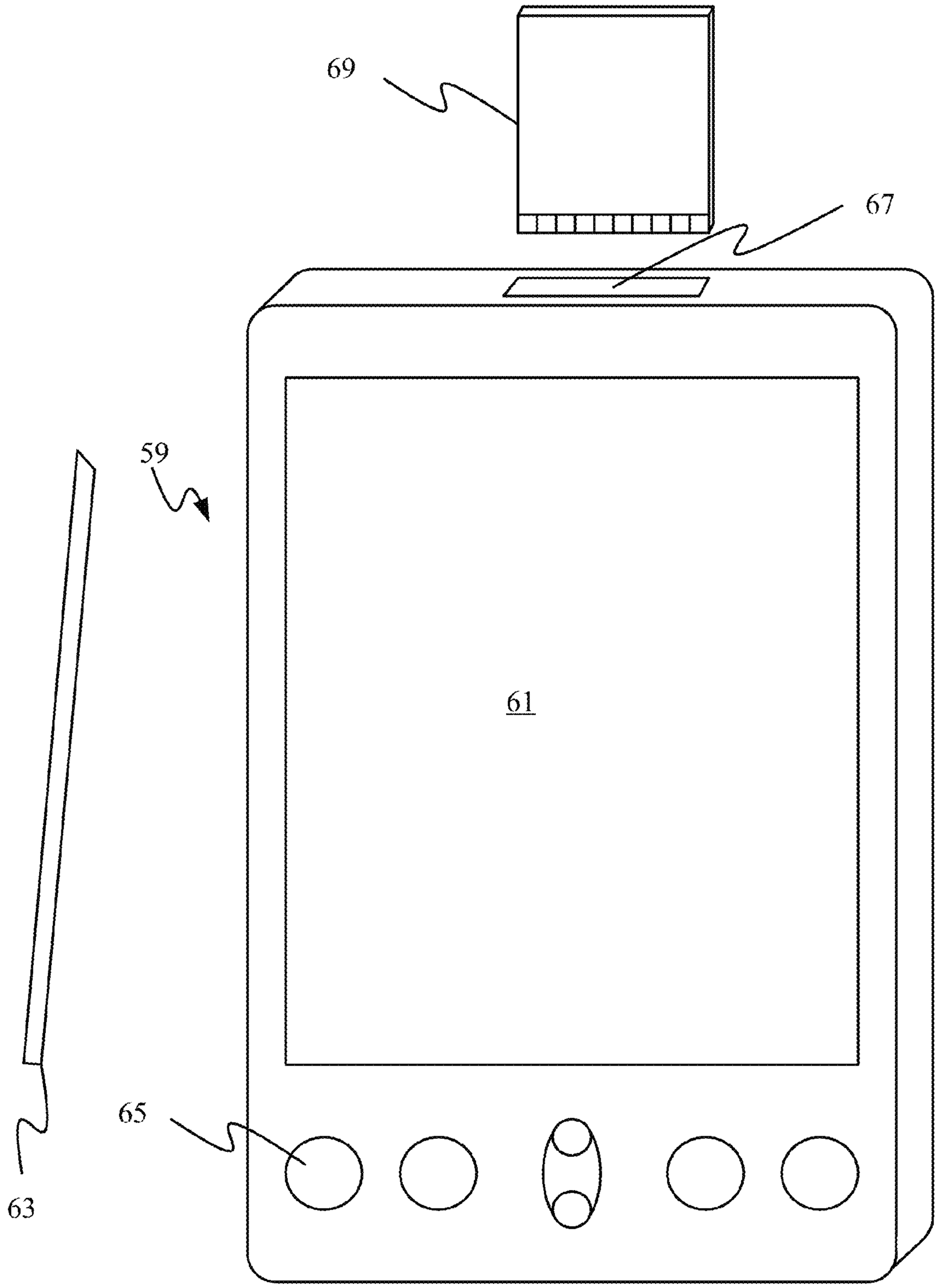

FIG. 32

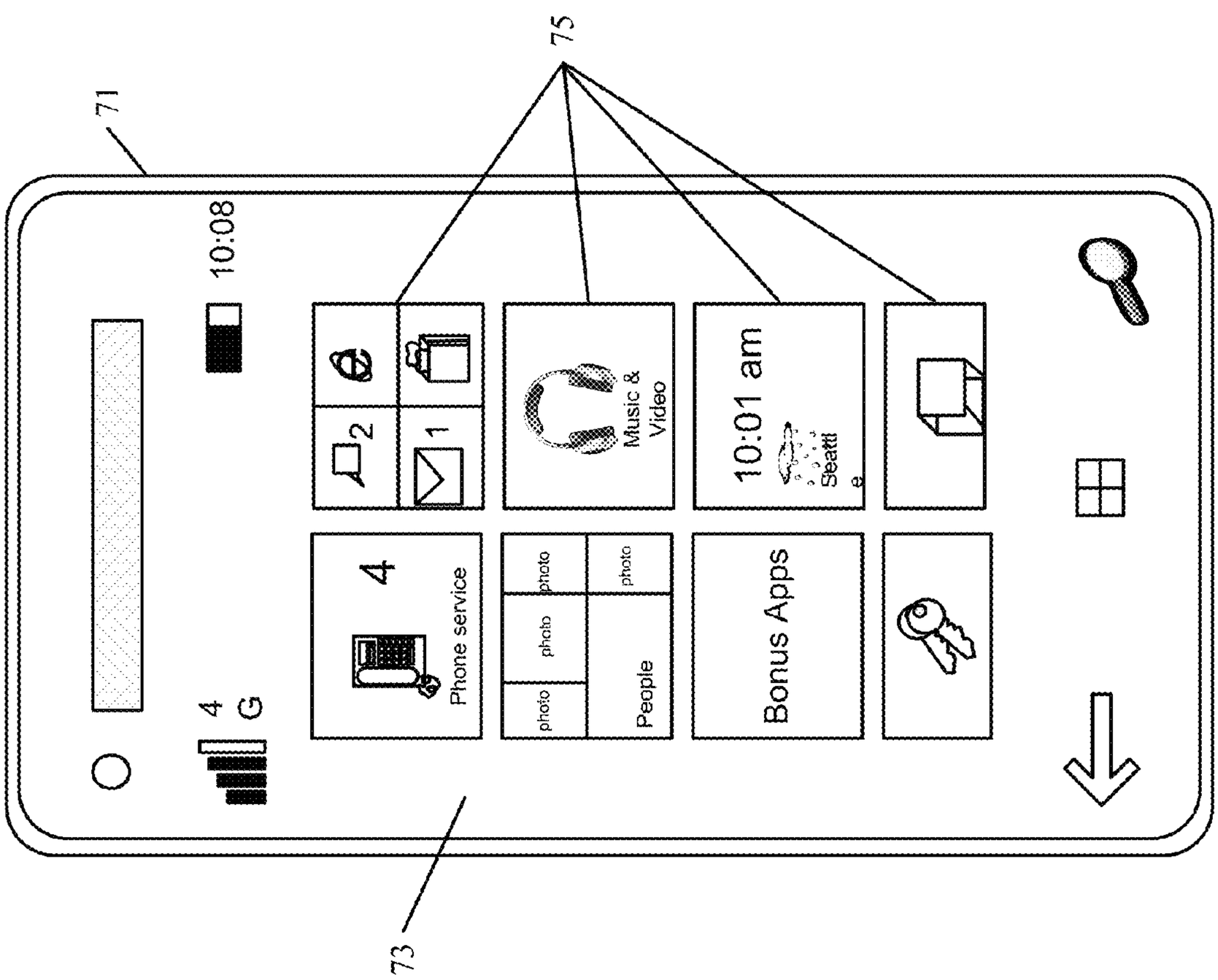
71
10:08
4
G
Phone service
4
photo
photo
photo
photo
People
Bonus Apps
Music &
Video
10:01 am
Seattl
e
73

FIG. 33

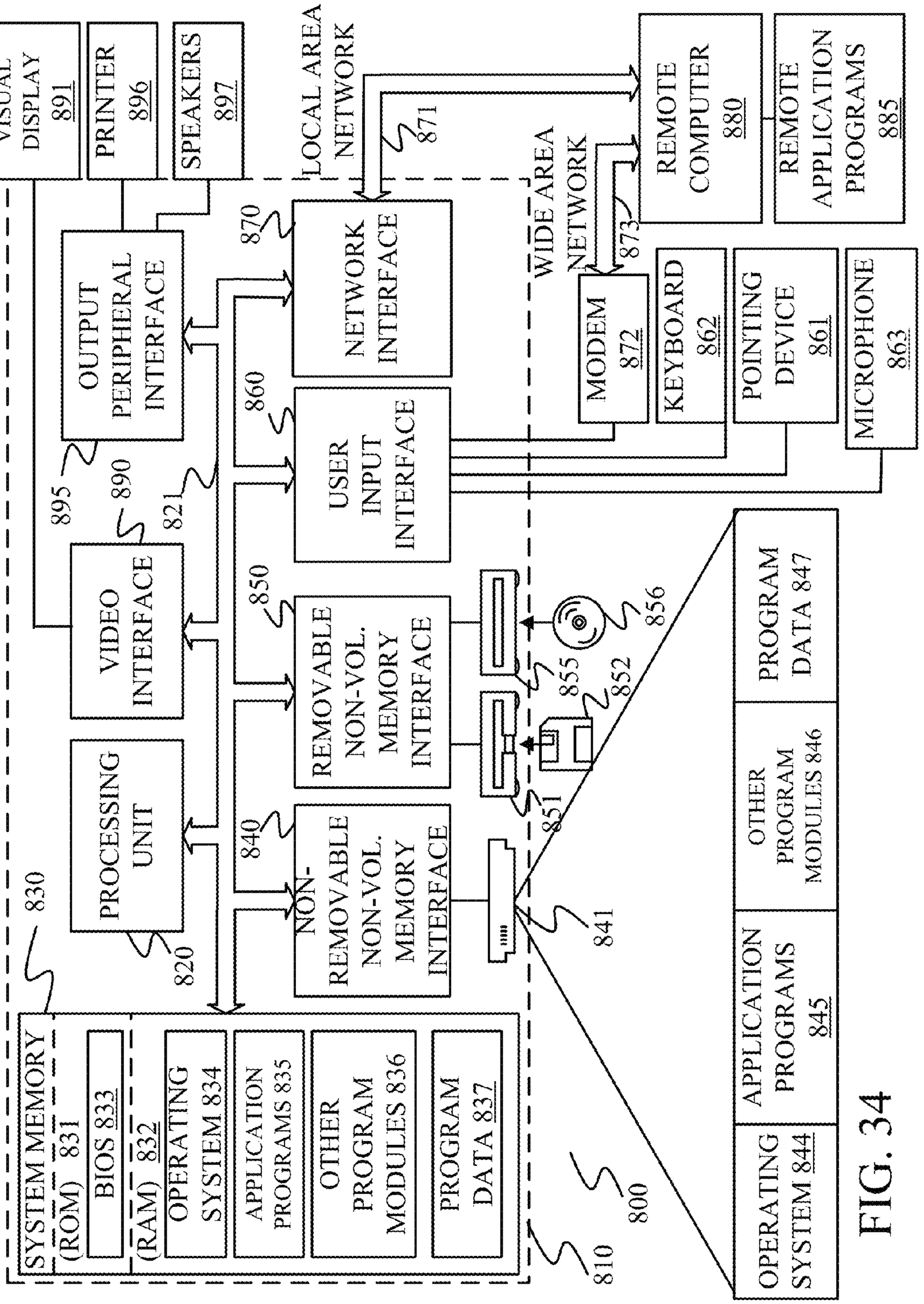
VISUAL DISPLAY 891
PRINTER 896
SPEAKERS 897
LOCAL AREA NETWORK
871
870
REMOTE COMPUTER 880
REMOTE APPLICATION PROGRAMS 885
WIDE AREA NETWORK
873
MODEM 872
KEYBOARD 862
POINTING DEVICE 861
MICROPHONE 863
OUTPUT PERIPHERAL INTERFACE
895
890
VIDEO INTERFACE
821
860
USER INPUT INTERFACE
NETWORK INTERFACE
850
REMOVABLE NON-VOL. MEMORY INTERFACE
840
NON-REMOVABLE NON-VOL. MEMORY INTERFACE
PROCESSING UNIT
820
830
SYSTEM MEMORY
(ROM) 831
BIOS 833
(RAM) 832
OPERATING SYSTEM 834
APPLICATION PROGRAMS 835
OTHER PROGRAM MODULES 836
PROGRAM DATA 837
851
852
855
856
841
PROGRAM DATA 847
OTHER PROGRAM MODULES 846
APPLICATION PROGRAMS 845
OPERATING SYSTEM 844
810
800

FIG. 34

DYNAMIC UPDATE INSTALLER FOR CUSTOMIZED SOFTWARE

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application is based on and claims the benefit of U.S. provisional patent application Ser. No. 61/986,488, filed Apr. 30, 2014, the content of which is hereby incorporated by reference in its entirety.

BACKGROUND

Computer systems are currently in wide use. Some such systems are customized (some significantly) before they are deployed at an end user's site. Such systems often also have updates which can be installed.

By way of example, some such computer systems include business systems, such as customer relations management (CRM) systems, enterprise resource planning (ERP) systems, line-of-business (LOB) systems, etc. In these types of systems, a general business system is first purchased by a user, or customer, and the user or customer often makes customizations, extensions or other modifications to that general business system, in order to obtain their own customized deployment.

Such systems often have updates published for them. The updates can include new releases, as well as bug fixes. For instance, when new releases of the business system are generated, they are often followed by a number of bug fixes for problems that were not fixed prior to release. The fixes are normally released, piecemeal, as they are generated. Periodically, however, a cumulative update package is released which includes all of the fixes generated, to that point. In the past, the cumulative update package was typically provided to the end-user in the form of fixed-media, such as on a CD-ROM. This cumulative update may, for example, include hundreds or even thousands of fixes and/or upgrades. In the case of a cumulative update, if the customer decides to defer installation of the update, the software system may lag behind by failing to leverage feature enhancements or performance optimizations that are part of the cumulative update.

Currently, users of customized software systems do not have an effective way to determine what critical updates are available at any given point. Thus, the users are limited in their ability to proactively obtain critical or even desirable updates as needed. Instead, such users await releases of fixed-media updates that may then be scheduled for deployment to the customized software system. Unlike an update to a desktop computer, these updates may affect tens or even hundreds of computers working together to provide an important function for an enterprise.

The discussion above is merely provided for general background information and is not intended to be used as an aid in determining the scope of the claimed subject matter.

SUMMARY

A computer-implemented method of updating a system of customized software is provided. The method includes receiving an update request and collecting contextual information relative to the system of customized software. A query is generated for updates applicable to the system of customized software based on the contextual information. A query response is received indicative of at least one applicable update. A selection relative to the at least one applicable update is received. At least one update is selectively applied based on the selection.

This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This Summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter. The claimed subject matter is not limited to implementations that solve any or all disadvantages noted in the background.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a block diagram of one exemplary update architecture.

FIG. **2** is a flow diagram illustrating one embodiment of operation of the architecture shown in FIG. **1** generating a dynamic update for customized software.

FIG. **3** is a block diagram of another exemplary update architecture leveraging a life cycle system in accordance with an embodiment.

FIG. **4** shows one example of a more detailed block diagram of an update installer component.

FIG. **5**, are screenshots of illustrative user interfaces.

FIG. **29** show/s one embodiment of the architecture shown in FIG. **3** deployed in a cloud computing architecture.

FIGS. **30-33** show various embodiments of mobile devices.

FIG. **34** is a block diagram of one illustrative computing environ ent.

DETAILED DESCRIPTION

FIG. **1** shows a block diagram of one exemplary architecture in which embodiments described herein are useful. Architecture **100** includes customer business system **101** (which can be an on premise system, a cloud-based system, or another system Architecture **100** also illustratively includes cloud-based update facility **103**. Business system **101** can be accessed by a user through user interfaces **115** generated either by business system **101** or by user device **116**. In one embodiment, user interfaces **115** have user input mechanisms **117** that can be actuated by user **114** in order to manipulate business system **101**.

Customer business system **101** illustratively includes processor **102**, data store **104**, user interface component **105**, update installer component **106**, conflict resolution component **119** and business process component **121**. Data store **104** illustratively includes data **108**, applications **110**, information that describes business processes **112**, information that describes workflows **114**, and other items **107**. In one embodiment, applications **110** include the business logic used to run business processes **112** and workflows **114** in business system **101**. Applications **110** illustratively operate on data **108**, which can include entities that represent items in the business system **101**. Thus, applications **110** can include a general ledger application, inventory application, applications that allow a user to track business opportunities, track sales or production in a business system, or a wide variety of other business applications. The entities, for instance, include customer entities that represent customers, opportunity entities that represent business opportunities, inventory entities that represent inventory items, quote and proposal entities that represent quotes and proposals, etc. The data **108** can include a wide variety of other entities and data, and those mentioned above are mentioned for the sake of example only. The user can illustratively access customer

business system **101** in order to perform activities, tasks, workflows, et cetera that are done in carrying out the business of the organization that employs business system **101**.

Business system **101** is provided as one example of an environment in which customized software is employed. However, many types of software are shipped to a customer in a first state and then later customized in order to fully meet the needs of the customer. The customization can be considered as a spectrum. On one side of the spectrum is software that is vastly customized or even further developed before deployment. On the other side of the customization spectrum is software that is operated in the condition in which it ships. Since customizations, by definition, introduce changes that depart from the as-shipped versions, updates to such customized software have typically required significant care and time in order to ensure that any customizations are not rendered inoperable or unstable by virtue of the update.

FIG. **2** is a flow diagram of a method of updating customized software in accordance with an embodiment. Method **150** begins at block **152** where a request to update the customized software system is received. The user may request the update for any number of reasons. For example, the user may wish to simply update business system **101** as part of a routine update process. In another example, the user may wish to update any or all portions of business system **101** in order to remedy a problem the user is experiencing. In still another example, the user may wish to update any or all portions of business system **101** in order to take advantage of new features provided by the updates. Essentially, the user may wish to update at any time for any of a variety of reasons. Previously, a user of customized software would need to wait until an update was provided on fixed media. Now, a user may begin the update process at his/her convenience for any number of reasons.

Such user initiated updates need not be synchronized with any update or release schedule set forth by the software provider. Such asynchronous updating can be beneficial to users, for example, in situations where the software provider releases updates according to a schedule, which may or may not be periodic, and may be dependent on factors that are not relevant to a particular user of business systems such as business system **101**. In this regard, the system or software updating process described herein can be temporally disjointed from the software provider's release schedule, allowing for software updating to be made independent of the software provider's release schedule. Additionally, operation of the customized computing system, itself, is improved since asynchronous updates can be performed to enhance functionality more frequently or in response to specific issues than would be available via a software manufacturer's update schedule.

In response to the update request, processor **102** causes update installer component **106** to collect version and contextual information relative to the customized software. Version information indicates the current version of the various modules and applications currently deployed in the customized software. Contextual information can be specific to individual components within business system **101** or it can be applicable to broader groupings of components. Contextual information can include business processes and/or configuration keys. Moreover, contextual information may also include information about the hardware upon which the customized software operates. Further, contextual information can include locality information (such as country and/or state) in order to facilitate compliance with local regulations or laws. Additionally, contextual information can include information about the customizations that have been made to business system **101**. Further still, contextual information can include error frequency, support request frequency, or any other information that may help identify applicable updates.

At block **156**, processor **102** causes update installer component **106** to generate a query to cloud-based update facility **103** based on the version information and the contextual information. Update facility **103** receives and processes the query and responds to update installer component **106** with a response indicative of applicable updates. As used herein, applicable updates are updates which are appropriate for business system **101** based on the contextual information and which have a newer version than the version information collected by update component **106** in block **154**. Such applicable updates may be critical updates, suggested updates, optional updates or updates of other levels of importance. The applicable updates are displayed to the user via user interface **115**. The user interface can facilitate user review of the applicable updates. For example, the updates may be filtered and/or grouped according to one or more criteria, such as country, module, business process, and configuration keys. At block **158** business system **101** receives a selection relative to one or more applicable updates. The selection may indicate that all, some, or none of the applicable updates will be applied. At block **160**, installer component selectively obtains any selected updates from update facility **103** and applies the applicable updates based on the selection received at block **158**.

The embodiment described above generally includes a system of custom software (business system **101**) interacting with update facility **103** to identify and obtain applicable updates. However, a recent innovation in business systems can be leveraged to improve the update process further. The innovation, referred to herein as a life cycle system, provides improved interaction between users, technicians and developers of custom software systems.

FIG. **3** is a block diagram of another exemplary update architecture leveraging a life cycle system in accordance with an embodiment. Environment **1000** bears some similarities to environment **100** and like components are numbered similarly. Life cycle system **200** illustratively includes project information **206**, environment information **208** (which can include information representative of a set of business processes **209** that are used by the user in customer business system **101**), update state tracking information **210**, services **202-204**, update information **203**, update recommendation service **212** and report generator service **214**. Services **202-204** can be used by various persons in order to identify, track and resolve issues that arise during various life cycle stages of a project (e.g., from presale to implementation and maintenance). For instance, as business system **101** is designed, built, deployed and tested, the various services **202-204** illustratively allow the developers as well as the user organization to track issues which arise, and to determine whether the user's expectations are met when the final instance of business system **101** is deployed at the organization.

A user can illustratively log in to life cycle system **200** to view the various information provided by services **202-204**. In one embodiment, for instance, services **202-204** include a service that allows a user to identify the needs of an organization and the basic functionality that is provided with a business system and generate a fit gap list that identifies the functionality or customizations that need to be made, to the business system, in order to meet the needs of the customer

that is deploying the business system. The services also illustratively include a diagnostic service that allows life cycle system **200** to identify the particular environmental information that defines the environment of the deployed business system **101**. For instance, the environmental data may identify the version number and identity of the operating system, the version number of the base system **101**, the particular fixes that have been applied to system **101**, the version number of the database and other application platforms used by business system **101**, whether business system **101** is in a production environment, a test environment, a user acceptance testing environment, etc., and a wide variety of other information. As can be appreciated, the environmental data of life cycle system **200** can provide ample contextual information for dynamic updates.

A user can access life cycle system **200** to view project information **206** that defines the user's projects, environmental information **208** that includes the environmental data mentioned above, as well as an indication of the set of business processes **209** that are run on business system **101**, update tracking information **210** that identifies the update state of business system **101** (for example, which updates have been applied and when), update information **203** that indicates detailed information corresponding to updates that have been installed, update recommendation service **212** that recommends updates for business system **101** based upon the information gathered from business system **101**, and report generator service **214** that can be used to generate various reports that are discussed in greater detail below.

When a user wishes to update any or all of business system **101**, the user can log in to life cycle system **200**. Once logged in, the user can request an update. Upon such request, life cycle system **200** uses environmental information **208** gathered or otherwise determined relative to business system **101** to provide contextual information. Life cycle system **200** then generates and conveys a query to update facility **103** based on the contextual information. Update facility **103** responds to life cycle system **200** with a listing of applicable updates based on the query submitted by life cycle system **200**. The listing of applicable updates is provided to the user to allow the user to select which updates the user wishes to apply. Once the applicable updates have been selected, the selected updates are downloaded and provided to update installer component **106** for installation. Update installer component **106** illustratively installs the selected updates, and can automatically resolve conflicts, when so commanded. The update state of customer business system **101** is illustratively uploaded to life cycle system **200** as update state tracking information **210**. Thus, the user can also log on to life cycle system **200** in order to view the update state tracking information **210** and to receive recommended updates from update recommendation service **212**, and to view various other information and reports as described in greater detail below.

FIG. **4** is a block diagram of one example of a more detailed embodiment of update installer component **106**. FIG. **4** shows that update installer component **106** illustratively includes impact analyzer component **132**, business process analyzer component **134**, installation engine **136**, and replay component **138**. Update installer **106** can include other components **140** as well. Impact analyzer component **132** allows the user to sec the impact of selected updates on objects and layers in business system **101**, before they are applied. Business process analyzer component **134** allows the user to see the impact of selected updates on business processes in system **101**, before they are applied. Installation engine **136** installs selected updates, and replay component **138** replays (or installs) the selected updates in other environments.

FIGS. **5-27** show screenshots of exemplary user interfaces provided during the update process according to one embodiment. One or more of the user interfaces may be provided by update installer component **106**. FIG. **5** shows a screenshot of one example of a user interface providing an introductory message. As shown in FIG. **5**, the user is presented with a "download" button allowing the user to download an update installer. Once downloaded, the update installer allows the user to download and evaluate updates for the custom software environment.

FIG. **6** shows a screenshot of a user interface provided by the update installer, once downloaded and started. The user is greeted with a welcome message indicating the function of the update installer. If the user actuates the "next" button the user interface shown in FIG. **7** will be provided. In FIG. **7**, "software license terms" are shown. The user can accept the license terms by actuating the "Accept and continue" button.

If the user accepts the license terms, another user interface, shown in FIG. **8**, is presented to the user. The user is presented with a choice to either "download and install updates" by logging into life cycle services system **200** or install a previously downloaded update package. In the screenshot shown in FIG. **8**, the user has selected the "download and install" option. Upon actuating the "Next" button, the user will be presented with the user interface shown in FIG. **9**.

FIG. **9** shows a screenshot of an example of a user interface where a user may log into life cycle system **200** or another suitable update system provided in a cloud-computing environment. The user may select either a Customer/Partner login or a Microsoft Employee login. Once logged in, the user is presented with the user interface display of FIG. **10**. In FIG. **10**, the user may view a group of updates to evaluate. In the embodiment shown, the user may select a user interface element showing the "Most recent" updates. Additionally, a user interface element, such as a checkbox, is provided to allow the user to use business process information from a life cycle system **200** project to evaluate updates. In the example shown, the user has selected the checkbox and thus such business process information is used for the evaluation. Further, the user may select a project to update. The available projects shown in FIG. **10** include: "aaaaaaaaaaaa," "test," and "foo." Once the user has selected a project, the user may actuate the "OK" button to proceed.

FIG. **11** shows a screenshot of an example of a user interface that is provided after the user selects a project. FIG. **11** indicates the download progress of the updates related to the selected project. Upon successful completion of the download, the next user interface display is provided to the user. FIG. **12** shows a screenshot of an example of a user interface provided to the user to allow the selection of "Binary updates," and/or "Application updates." In the example shown, the user has selected both. Upon actuating the "Next" Button, the next user interface display will be provided to the user. FIG. **13** shows a screenshot of an example of a user interface allowing the user the select a model store. In the example provided, the user has selected model store: "RDVM0026F9PRIYA-AXDB_model." The user may then continue the update process by actuating the "Next" button.

FIG. **14** shows a screenshot of an example of a user interface that is provided to the user once the user has

selected the model store and actuated the "Next" button. The user is provided with the ability to "Select application updates." In this regard, the user may simply select a radio button, or other suitable user interface element, indicating that all updates are selected. However, the user may also select applicable updates. When the user so selects, additional filters such as "Fix type," "Module," "License Code," "Region/Country," and "Business process (Lifecycle Services)" can be used to filter applicable updates.

The "License code" filter mechanism allows the user to filter the applicable updates by license code elements. Such elements can include, for example, an electronic banking code element, the general ledger code element (or application), etc.

The "Region/Country" context filter mechanism allows the user to filter the applicable updates by region/country' context. For instance, systems that are deployed in one country may not be interested in some updates that were generated, in particular, for a system in another country. Thus, the applicable updates can be filtered by region/country context.

The "Business process" filter mechanism allows the user to filter the applicable updates based on the business processes to which they apply. By way of example, in one embodiment, life cycle system **200** includes a service **202-204** that uses a business process modeler to generate a model of the business processes in a given customer business system **101**. Thus, the set of business processes **209** for the individual customer business system **101** is stored so that the user can view the various business processes in system **101**. Update installer component **106** illustratively accesses the set of business processes **209** from life cycle system **200** and displays those processes in the user input mechanism. Thus, the user can select the particular business processes in business system **101** to filter applicable updates.

Additionally, a search box can be provided, as shown in the example, allowing the user to search for a particular update. The updates indicated in the example shown in FIG. **14** are grouped according to fix type. Thus a major feature update (KB2929061:Test 12 for Dependency Tool) is shown separately from the 17 optional fixes. An additional display pane has tabs for "Details" and for "Conflicts." In FIG. **14**, the "Details" tab is selected and no details are shown. In contrast, FIG. **15** shows the "Conflicts" tab selected and a "Conflict summary" provided indicating that there is one "Classes" conflict for the 17 optional fixes. The user may select the "Get conflict details" link and obtain additional information about the conflict. FIG. **16** shows a screenshot of an example of a user interface provided to a user in order to provide more information about a conflict. In the example shown, the conflict is related to a class in the USR layer. More particularly, the conflict is related to an Object named SysChecklist_Servicing. The display also shows that there is only one such conflict. Further, the user interface display may also include user interface element that allows the user to "Export to Excel" the conflict information or start an "Impact Analysis wizard." In order to proceed, the user actuates the "Next" button.

FIG. **17** shows a screenshot of an example of a user interface that is provided to the user in order to review the selected updates. If the user agrees with the listing of selected updates, the user may select the "Next" button to proceed. If, however, the user wishes to change the selection, the user may select the "Back" button to return to an earlier screen in order to change the selection.

Once the user has accepted the listing of updates by pressing the "Next" button a user interface display is provided allowing the user to save the updates. FIG. **18** shows an example of a user interface display allowing the user to save updates. The user is provided with a button that, when actuated, will "Save custom update package." Upon pressing the button, a SaveAs box is provided allowing the user to name the file and select its type and location. Once the user has entered the requisite information, the user may press the "Save" button to save the custom update package.

Once the custom update package has been saved, the update may be applied in an off-line mode. That is, the user need not log in to a cloud-based update provider. The process of applying the saved custom update package begins similarly to the online version. For example, the user interfaces shown in FIGS. **20** and **21** are identical to those of FIGS. **6** and **7** and need not be described again. Additionally, while the user interface shown in FIG. **22** is similar to that of FIG. **8**, the user has chosen to install a previously downloaded update package ("C:\Users\MBSUser\Desktop\DynamicsAXPackage.axupdate"). Upon actuating the "Next" Button, the user is presented with the next user interface display. FIG. **23** is a screenshot of an example of a user interface presented to a user to allow the selection of "Binary updates," "Application updates" or both. Additionally, the user interface shown in FIG. **23** allows the user to select between an "Express" update mode in which all application updates are installed from the update package, or to select a "Custom" mode where the user may choose specific application updates to install. Once the user has made his/her choices, the user continues by pressing the "Next" button.

The user interfaces shown in FIGS. **24**, **25** and **26** are identical to those of FIGS. **13**, **16** and **17**, respectively, and thus the descriptions thereof are not repeated.

FIG. **27** shows a screenshot of an example of a user interface allow ing a user to review the components and select components of the custom software system to update. In the example shown, the user has chosen to update: Database, Application Object Server, Client and Office add-ins, Components, Setup Support Files, Help Server, and Retail Components. Moreover, within the Application Object Server component, the user has chosen the "01-Microsoft" component for updating. Similarly, in the "Retail Components" component, the user has chosen a number of subcomponents for updating and has left a number of subcomponents unchanged. Specifically, the user has chosen to update: Retail Headquarters, Retail POS, Retail Store Database Utility, Commerce Data Exchange: Real-Time Service, RetailCommerceAsyneClient, and RetailCommerceAsyncServer. The user has chosen to leave the following subcomponents unchanged: Retail Salt Utility, Commerce Data Exchange:Synch Service, Retail Online Channel, Retail SDK, Retail Server, and Retail Modern POS. Additionally, as shown in FIG. **27**, the user is provided with a notification that the "AOS instances will be stopped during the update process." The user is also presented with an option to restart such AOS instances after installation. Once the user is satisfied with his/her choices, the user actuates the "install" button thereby causing the installer to perform the installation of the updates.

At this point in the description, the user has now selected a potential set of updates to be applied (or installed) and has reviewed not only the impact that the selected updates will have on the set of business processes in business system **101**, but the impact it will have on the object and layer levels as well. The user has reviewed the conflicts that will be generated and can review even detailed information corresponding to the impact and to the conflicts. The update

selection is saved so that it can be exported for application in other environments as well.

Once the user actuates the "Install" button, the installer will install the selected updates. During installation, installation engine **136** can generate a progress update display, such as user interface **540** shown in FIG. **28**. Of course, other progress update displays can be shown as well.

When installation engine **136** completes installing the updates, it also illustratively updates the update state tracking information **210** in life cycle system **200**. Installation engine **136** then generates a user interface display that displays the status of the installation. The user interface can indicate for example, that the updates to some of the various components have been successfully installed, while the updates to others have not been successfully installed. If the user wishes to view more details, the user can illustratively actuate user input mechanism to be navigated to a more detailed log file that shows the details of the corresponding installation.

After the installation is complete, conflict resolution component **119** illustratively generates a user interface display that allows the user to request that conflict resolution component **119** will automatically resolve as many conflicts as it can, without user intervention. Resolving conflicts is also referred to herein as performing a code merge.

The conflict resolution component **119** can do this in a variety of different ways. For instance, it may be that the base system of business system **101** offered by the manufacturer of system **101** is being updated with cumulative update package **120**. Thus, there may be an original base version of system **101** that is updated to obtain an updated version of system **101**. However, it may also be that the organization deploying system **101** has modified or otherwise customized the base version of system **101**. Thus, in one embodiment, conflict resolution component **119** does a three-way compare that compares the original base version of system **101**, with the updated version of system **101**, and with the customized version of system **101** that is actually deployed at the organization. Conflict resolution component **119** then performs operations so that the customized version of system **101** that is actually deployed will be updated in a way to eliminate conflicts.

An example may be helpful. For instance, assume that the base version of system **101** has an element named "string S clock". Assume that the user has customized the base version of system **101** so that the element in the deployed version of system **101** is now called "string S+1 clock", If the particular update being installed by the user changes the value of "string S clock" in the base version of system **101**, then there is a conflict because the user has already customized that element to "string S+1 clock". Thus, conflict resolution component **119** does a three-way text based comparison to revise the update so that it is consistent with the user's customization of "string S clock" to "sting S+1 clock". Of course, conflict resolution component **119** can resolve conflicts in a wide variety of other ways as well.

Conflict resolution component **119** then stores conflict resolution (or code merge) results information so that it can be reviewed, or used, later. For instance, component **119** can store the object path where the merge was performed. It can store the total number of conflicts, the number of resolved conflicts, and a time stamp. Of course, if can store other information as well.

The present discussion has mentioned processors and servers. In one embodiment, the processors and servers include computer processors with associated memory and timing circuitry, not separately shown. They are functional parts of the systems or devices to which they belong and are activated by, and facilitate the functionality of the other components or items in those systems.

Also, a number of user interfaces have been discussed. Such user interfaces can take a wide variety of different forms and can include a wide variety of different user actuatable input mechanisms disposed thereon. For instance, the user actuatable input mechanisms can be text boxes, check boxes, icons, links, drop-down menus, search boxes, etc. They can also be actuated in a wide variety of different ways. For instance, they can be actuated using a point and click device (such as a track ball or mouse). They can be actuated using hardware buttons, switches, a joystick or keyboard, thumb switches or thumb pads, etc. They can also be actuated using a virtual keyboard or other virtual actuators. In addition, where the screen on which they are displayed is a touch sensitive screen, they can be actuated using touch gestures. Also, where the device that displays them has speech recognition components, they can be actuated using speech commands.

A number of data stores have also been discussed. It will be noted they can each be broken into multiple data stores. All can be local to the systems accessing them, all can be remote, or some can be local while others are remote. All of these configurations are contemplated herein.

Also, the figures show a number of blocks with functionality ascribed to each block. It will be noted that fewer blocks can be used so the functionality is performed by fewer components. Also, more blocks can be used with the functionality distributed among more components.

FIG. **29** is a block diagram of architecture **100**, shown in FIG. **3**, except that its elements are deployed in a cloud computing architecture **500**. The term "cloud". "cloud-based system", "cloud-based architecture", or similar terms refer to a network of devices (e.g. server computers, routers, etc.). Cloud computing provides computation, software, data access, and storage services that do not require end-user knowledge of the physical location or configuration of the system that delivers the services. In various embodiments, cloud computing delivers the services over a wide area network, such as the internet, using appropriate protocols. For instance, cloud computing providers deliver applications over a wide area network and they can be accessed through a web browser or any other computing component. Software or components of architecture **100** as well as the corresponding data, can be stored on servers at a remote location. The computing resources in a cloud computing environment can be consolidated at a remote data center location or they can be dispersed. Cloud computing infrastructures can deliver services through shared data centers, even though they appear as a single point of access for the user. Thus, the components and functions described herein can be provided from a service provider at a remote location using a cloud computing architecture. Alternatively, they can be provided from a conventional server, or they can be installed on client devices directly, or in other ways.

The description is intended to include both public cloud computing and private cloud computing. Cloud computing (both public and private) provides substantially' seamless pooling of resources, as well as a reduced need to manage and configure underlying hardware infrastructure.

A public cloud is managed by a vendor and typically supports multiple consumers using the same infrastructure. Also, a public cloud, as opposed to a private cloud, can free up the end users from managing the hardware. A private cloud may be managed by the organization itself and the infrastructure is typically not shared with other organiza-

tions. The organization still maintains the hardware to some extent, such as installations and repairs, etc.

In the embodiment shown in FIG. **29**, some items are similar to those shown in FIG. **3** and they are similarly numbered, FIG. **29** specifically shows that systems **101** and **200** can be located in cloud **502** (which can be public, private, or a combination where portions are public while others are private). Therefore, the user uses a user device **116** to access those systems through cloud **502**.

FIG. **29** also depicts another embodiment of a cloud architecture. FIG. **29** shows that it is also contemplated that some elements of architecture **100** are disposed in cloud **502** while others are not. By way of example, data store **104** can be disposed outside of cloud **502**, and accessed through cloud **502**. Regardless of where they are located, they can be accessed directly by device **116**, through a network (either a wide area network or a local area network), they can be hosted at a remote site by a service, or they can be provided as a service through a cloud or accessed by a connection service that resides in the cloud. All of these architectures are contemplated herein.

It will also be noted that architecture **100**, or portions of it, can be employed on a wide variety of different devices. Some of those devices include servers, desktop computers, laptop computers, tablet computers, or other mobile devices, such as palm top computers, cell phones, smart phones, multimedia players, personal digital assistants, etc.

FIG. **30** is a simplified block diagram of one embodiment of a handheld or mobile computing device that can be used as a user's or client's hand held device **16**, in which the present system (or parts of it) can be deployed. FIGS. **30-33** depict examples of handheld or mobile devices.

FIG. **30** provides a general block diagram of the components of a client device **16** that can run components of architecture **100** or that interacts with architecture **100**. In device **16**, a communications link **13** is provided that allows the handheld device to communicate with other computing devices and under some embodiments provides a channel for receiving information automatically, such as by scanning. Examples of communications link **13** include an infrared port, a serial/USB port, a cable network port such as an Ethernet port, and a wireless network port allowing communication though one or more communication protocols including General Packet Radio Service (GPRS), LTE, HSPA, HSPA+ and other 3G and 4G radio protocols, 1Xrtt, and Short Message Service, which are wireless services used to provide cellular access to a network, as well as 802.11 and 802.11b (Wi-Fi) protocols, and Bluetooth protocol, which provide local wireless connections to networks.

According to other embodiments, applications or systems are received on a removable Secure Digital (SD) card that is connected to a SD card interface **15**. SD card interface **15** and communication links **13** communicate with a processor **17** along a bus **19** that is also connected to memory **21** and input/output (I/O) components **23**, as well as clock **25** and location system **27**.

I/O components **23**, in one embodiment, are provided to facilitate input and output operations. I/O components **23** for various embodiments of the device **16** can include input components such as buttons, touch sensors, multi-touch sensors, optical or video sensors, voice sensors, touch screens, proximity sensors, microphones, tilt sensors, and gravity switches and output components such as a display device, a speaker, and or a printer port. Other I/O components **23** can be used as well.

Clock **25** illustratively comprises a real time clock component that outputs a time and date. It can also, illustratively, provide timing functions for processor **17**.

Location system **27** illustratively includes a component that outputs a current geographical location of device **16**. This can include, for instance, a global positioning system (GPS) receiver, a LORAN system, a dead reckoning system, a cellular triangulation system, or other positioning system. It can also include, for example, mapping software or navigation software that generates desired maps, navigation routes and other geographic functions.

Memory **21** stores operating system **29**, network settings **31**, applications **33**, application configuration settings **35**, data store **37**, communication drivers **39**, and communication configuration settings **41**. Memory **21** can include all types of tangible volatile and non-volatile computer-readable memory devices. It can also include computer storage media (described below). Memory **21** stores computer readable instructions that, when executed by processor **17**, cause the processor to perform computer-implemented steps or functions according to the instructions. Processor **17** can be activated by other components to facilitate their functionality as well.

Examples of the network settings **31** include things such as proxy information, Internet connection information, and mappings. Application configuration settings **35** include settings that tailor the application for a specific enterprise or user, Communication configuration settings **41** provide parameters for communicating with other computers and include items such as GPRS parameters, SMS parameters, connection user names and passwords.

Applications **33** can be applications that have previously been stored on the device **16** or applications that are installed during use, although these can be part of operating system **29**, or hosted external to device **16**, as well.

FIGS. **31** and **32** provide additional examples of devices **16** that can be used, although others can be used as well. In FIG. **31**, a feature phone or mobile phone **45** is provided as the device **16**. Phone **45** includes a set of keypads **47** for dialing phone numbers, a display **49** capable of displaying images including application images, icons, web pages, photographs, and video, and control buttons **51** for selecting items shown on the display. The phone includes an antenna **53** for receiving cellular phone signals such as General Packet Radio Service (GPRS) and 1Xrtt, and Short Message Service (SMS) signals. In some embodiments, phone **45** also includes a Secure Digital (SD) card slot **55** that accepts a SD card **57**.

The mobile device of FIG. **32** is a personal digital assistant (PDA) **59** or a multimedia player or a tablet computing device, etc. (hereinafter referred to as PDA **59**). PDA **59** includes an inductive screen **61** that senses the position of a stylus **63** (or other pointers, such as a user's finger) when the stylus is positioned over the screen. This allows the user to select, highlight, and move items on the screen as well as draw and write. PDA **59** also includes a number of user input keys or buttons (such as button **65**) which allow the user to scroll through menu options or other display options which are displayed on display **61**, and allow the user to change applications or select user input functions, without contacting display **61**. Although not shown, PDA **59** can include an internal antenna and an infrared transmitter/receiver that allow for wireless communication with other computers as well as connection ports that allow for hardware connections to other computing devices. Such hardware connections are typically made through a cradle that connects to the other computer through a serial or USB port.

As such, these connections are non-network connections. In one embodiment, mobile device **59** also includes a SD card slot **67** that accepts a SD card **69**.

FIG. **33** is similar to FIG. **31** except that the phone is a smart phone **71**. Smart phone **71** has a touch sensitive display **73** that displays icons or tiles or other user input mechanisms **75**. Mechanisms **75** can be used by a user to run applications, make calls, perform data transfer operations, etc. In general, smart phone **71** is built on a mobile operating system and offers more advanced computing capability and connectivity than a feature phone

FIG. **31** through FIG. **33** illustrate particular forms of device **16** illustrated in FIG. **34**. It should be appreciated that other forms of the devices **16**, other than those shown in FIGS. **31-33**, are possible.

FIG. **34** is one embodiment of a computing environment in which architecture **100**, or parts of it, (for example) can be deployed. With reference to FIG. **34**, an exemplary system for implementing some embodiments includes a general-purpose computing device in the form of a computer **810**. Components of computer **810** may include, but are not limited to, a processing unit **820** (which can comprise processor **10** or the processor in system **200** or device **16**), a system memory **830**, and a system bus **821** that couples various system components including the system memory to the processing unit **820**. The system bus **821** may be any of several types of bus structures including a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of bus architectures. By way of example, and not limitation, such architectures include Industry Standard Architecture (ISA) bus, Micro Channel Architecture (MCA) bus, Enhanced ISA (EISA) bus, Video Electronics Standards Association (VESA) local bus, and Peripheral Component Interconnect (PCI) bus also known as Mezzanine bus. Memory and programs described with respect to FIG. **1** can be deployed in corresponding portions of FIG. **34**.

Computer **810** typically includes a variety of computer readable media. Computer readable media can be any available media that can be accessed by computer **810** and includes both volatile and nonvolatile media, removable and non-removable media. By way of example, and not limitation, computer readable media may comprise computer storage media and communication media. Computer storage media is different from, and does not include, a modulated data signal or carrier wave. It includes hardware storage media including both volatile and nonvolatile, removable and non-removable media implemented in any method or technology for storage of information such as computer readable instructions, data structures, program modules or other data. Computer storage media includes, but is not limited to, RAM, ROM, EEPROM, flash memory or other memory technology, CD-ROM, digital versatile disks (DVD) or other optical disk storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to store the desired information and which can be accessed by computer **810**. Communication media typically embodies computer readable instructions, data structures, program modules or other data in a transport mechanism and includes any information delivery media. The term "modulated data signal" means a signal that has one or more of its characteristics set or changed in such a manner as to encode information in the signal. By way of example, and not limitation, communication media includes wired media such as a wired network or direct-wired connection, and wireless media such as acoustic, RF, infrared and other wireless media. Combinations of any of the above should also be included within the scope of computer readable media.

The system memory **830** includes computer storage media in the form of volatile and/or nonvolatile memory such as read only memory (ROM) **831** and random access memory (RAM) **832**. A basic input/output system **833** (BIOS), containing the basic routines that help to transfer information between elements within computer **810**, such as during start-up, is typically stored in ROM **831**. RAM **832** typically contains data and/or program modules that are immediately accessible to and/or presently being operated on by processing unit **820**. By way of example, and not limitation, FIG. **34** illustrates operating system **834**, application programs **835**, other program modules **836**, and program data **837**.

The computer **810** may also include other removable/non-removable volatile/nonvolatile computer storage media. By way of example only, FIG. **34** illustrates a hard disk drive **841** that reads from or writes to non-removable, nonvolatile magnetic media, a magnetic disk drive **851** that reads from or writes to a removable, nonvolatile magnetic disk **852**, and an optical disk drive **855** that reads from or writes to a removable, nonvolatile optical disk **856** such as a CD ROM or other optical media. Other removable/non-removable, volatile/nonvolatile computer storage media that can be used in the exemplary operating environment include, but are not limited to, magnetic tape cassettes, flash memory cards, digital versatile disks, digital video tape, solid state RAM, solid state ROM, and the like. The hard disk drive **841** is typically connected to the system bus **821** through a non-removable memory interface such as interface **840**, and magnetic disk drive **851** and optical disk drive **855** are typically connected to the system bus **821** by a removable memory interface, such as interface **850**.

Alternatively, or in addition, the functionality described herein can be performed, at least in part, by one or more hardware logic components. For example, and without limitation, illustrative types of hardware logic components that can be used include Field-programmable Gate Arrays (FPGAs), Program-specific Integrated Circuits (ASICs). Program-specific Standard Products (ASSPs), System-on-a-chip systems (SOCs), Complex Programmable Logic Devices (CPLDs), etc.

The drives and their associated computer storage media discussed above and illustrated in FIG. **34**, provide storage of computer readable instructions, data structures, program modules and other data for the computer **810**. In FIG. **34**, for example, hard disk drive **841** is illustrated as storing operating system **844**, application programs **845**, other program modules **846**, and program data **847**. Note that these components can either be the same as or different from operating system **834**, application programs **835**, other program modules **836**, and program data **837**. Operating system **844**, application programs **845**, other program modules **846**, and program data **847** are given different numbers here to illustrate that, at a minimum, they are different copies.

A user may enter commands and information into the computer **810** through input devices such as a keyboard **862**, a microphone **863**, and a pointing device **861**, such as a mouse, trackball or touch pad. Other input devices (not shown) may include a joystick, game pad, satellite dish, scanner, or the like. These and other input devices are often connected to the processing unit **820** through a user input interface **860** that is coupled to the system bus, but may be connected by other interface and bus structures, such as a parallel port, game port or a universal serial bus (USB), A visual display **891** or other type of display device is also connected to the system bus **821** via an interface, such as a

video interface **890**. In addition to the monitor, computers may also include other peripheral output devices such as speakers **897** and printer **896**, which may be connected through an output peripheral interface **895**.

The computer **810** is operated in a networked environment using logical connections to one or more remote computers, such as a remote computer **880**. The remote computer **880** may be a personal computer, a hand-held device, a server, a router, a network PC, a peer device or other common network node, and typically includes many or all of the elements described above relative to the computer **810**. The logical connections depicted in FIG. **41** include a local area network (LAN) **871** and a wide area network (WAN) **873**, but may also include other networks. Such networking environments are commonplace in offices, enterprise-wide computer networks, intranets and the Internet.

When used in a LAN networking environment, the computer **810** is connected to the LAN **871** through a network interface or adapter **870**. When used in a WAN networking environment, the computer **810** typically includes a modem **872** or other means for establishing communications over the WAN **873**, such as the Internet. The modem **872**, which may be internal or external, may be connected to the system bus **821** via the user input interface **860**, or other appropriate mechanism. In a networked environment, program modules depicted relative to the computer **810**, or portions thereof, may be stored in the remote memory storage device. By way of example, and not limitation, FIG. **34** illustrates remote application programs **885** as residing on remote computer **880**. It will be appreciated that the network connections shown are exemplary and other means of establishing a communications link between the computers may be used.

It should also be noted that the different embodiments described herein can be combined in different ways. That is, parts of one or more embodiments can be combined with parts of one or more other embodiments. All of this is contemplated herein.

Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined in the appended claims is not necessarily limited Co the specific features or acts described above. Rather, the specific features and acts described above are disclosed as example forms of implementing the claims.

What is claimed is:

1. A method of updating a customized system, the method comprising:

receiving an update request;

obtaining contextual information that includes information about a customization that has been made to the customized system;

generating a query for an update to the customized system based on the contextual information and version information of a module and an application deployed by the customized system;

receiving a query response indicative of a potential update;

obtaining the potential update based on the query response;

receiving a selection relative to an update type;

receiving a selection of a model store after obtaining the potential update;

receiving a selection of an application update related to the selected model store after receiving the selection of the model store; and

selectively applying the application update related to the selected model store based on selection of the application update related to the selected model store and selection of the model store.

2. The method of claim **1**, further comprising identifying particular environmental information of the customized system.

3. The method of claim **2**, wherein the particular environmental information includes an indication of a production environment.

4. The method of claim **2**, wherein the particular environmental information includes an indication of a test environment.

5. The method of claim **1**, wherein the contextual information includes information about hardware upon which the customized system operates.

6. The method of claim **1**, wherein the contextual information includes locality information.

7. The method of claim **1**, further comprising performing an impact analysis to determine conflicts relative to the selected application update related to the selected model store and the selected model store.

8. A custom computing system comprising:

a processor;

a storage device coupled to the processor and configured to store code, which when executed by the processor, causes the processor to execute a customized function, wherein the customized function includes a change from an as-shipped version of the customized function;

an input component coupled to the processor and configured to receive a user input;

a user interface component coupled to the processor and configured to generate a user interface;

a data store storing data indicative of organization processes and workflows; and

an update installer interface configured to communicate with a remote device to obtain a potential update;

wherein the user interface component is configured to display an update type selection user interface to receive a user input selection of one of a plurality of update types;

wherein the user interface component is further configured to display a model store selection user interface to receive a user input selection of a model store after obtaining the potential update;

wherein the user interface component is further configured to display an application update selection user interface to receive a user input selection of an application update related to the selected model store after receiving the user input selection of the model store; and

wherein the custom computing system is configured to obtain contextual information about the custom computing system and selectively apply the application update related to the selected model store to the custom computing system based on the user input selection of the application update related to the selected model store and the user input selection of the model store, and wherein the application update related to the selected model store is received from the remote device through the update installer interface prior to receiving the user input selection of the model store.

9. The custom computing system of claim **8**, wherein the user interface component is further configured to present an element that, when selected by a user, will cause the custom computing system to download an installer component from the remote device.

10. The custom computing system of claim **8**, wherein the user interface component is further configured to present an authentication interface.

11. The custom computing system of claim **8**, wherein the one of the plurality of update types includes a binary update type.

12. The custom computing system of claim **8**, wherein the one of the plurality of update types includes an application update type.

13. The custom computing system of claim **8**, wherein the user interface component is further configured to present a user interface element that allows a user to select less than all of a plurality of application updates for installation.

14. The custom computing system of claim **13**, further comprising an impact analysis module configured to determine conflicts relative to the user selected less than all of the plurality of application updates and the user input selection of the model store.

15. The custom computing system of claim **13**, wherein the user interface component is further configured to provide a user interface element that allows the user to save a custom update package.

16. The custom computing system of claim **15**, wherein the user interface component is further configured to provide a user interface element that allows the user to load the custom update package for installation.

* * * * *